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Patent and Trademark Office

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Oct. 12, 1985 and is announced in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

International PCT fees have been changed effective Oct. 29, 1985 and were announced in the *PCT Gazette* on Aug. 29, 1985 and in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	
if paid before Oct. 5, 1985	$ 125.00
if paid on or after Oct. 7, 1985	170.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	
if paid before Oct. 5, 1985	500.00
if paid on or after Oct. 7, 1985	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Oct. 12, 1985	680.00
if paid on or after Oct. 15, 1985	750.00
International fees	
Basic fee (first 30 pages):	
if paid before Oct. 29, 1985	230.00
if paid on or after Oct. 29, 1985	280.00
Basic Supplemental fee (for each page over 30):	
if paid before Oct. 29, 1985	4.00
if paid on or after Oct. 29, 1985	6.00
Designation fee (for the first 10 national or regional offices):	
if paid before Oct. 29, 1985	55.00
if paid on or after Oct. 29, 1985	70.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Aug. 28, 1985. *Acting Commissioner of Patents and Trademarks.*

Patent Cooperation Treaty (PCT) Update

Change in the Search Fee for the European Patent Office Effective Oct. 12, 1985 and Change in International Fees Effective Oct. 29, 1985

The International Bureau of the World Intellectual Property Organization has informed the United States Patent and Trademark Office that due to changes in the exchange rate of the U.S. dollar with regard to the Deutschmark, the dollar amount of the Search Fee for U.S. applicants choosing the European Patent Office as Searching Authority will increase from $680.00 to $750.00 effective Oct. 12, 1985.

The International Bureau of the World Intellectual Property Organization also has informed the United States Patent and Trademark Office that, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, the dollar amount of the International Fees for PCT applications filed in the United States Receiving Office will increase. Effective Oct. 29, 1985 the amount of the International Fees for PCT applications filed in the United States Receiving Office will be:

Basic Fee (first 30 pages)	280.00
Basic Supplemental Fee (each page over 30)	6.00
Designation Fee (per country or region up to ten)	70.00
Designation Fee (for 11th and subsequent countries or regions)	No Charge

DONALD J. QUIGG,
Aug. 28, 1985. *Commissioner of Patents and Trademarks — Designate.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on September 21, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,349,920 through 4,351,064

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	$ 200.00
By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are s et forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	$ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,319,342, Re. S.N. 763,171, Filed Aug. 7, 1985, Cl. 365/149, ONE DEVICE FIELD EFFECT TRANSISTOR (FET) AC STABLE RANDOM ACCESS MEMORY (RAM) ARRAY, Roy E. Scheuerlein, Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Robert J. Haase, et al., Ex. Gp.: 233

4,396,994, Re. S.N. 761,401, Filed Aug. 1, 1985, Cl. 364/900, DATA SHIFTING AND ROTATING APPARATUS, Sung M. Kang, et al., Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 237

4,397,276, Re. S.N. 761,044, Filed July 31, 1985, Cl. 123/342, TWO-SHIFT THROTTLE CONTROL SYSTEM FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE, Tsutomu Hayashida, Owner of Record: *Nissan Motor Co., Ltd., Kanagawa-Ken, Japan,* Attorney or Agent: Joseph M. Lane, et al., Ex. Gp.: 342

4,397,753, Re. S.N. 761,864, Filed Aug. 2, 1985, Cl. 252/79.3, SOLDER STRIPPING SOLUTION, James J. Czaja, Owner of Record: *Circuit Chemistry Corp., Maple Plain, Minn.,* Attorney or Agent: Hugh D. Jaeger, Ex. Gp.: 131

4,400,894, Re. S.N. 760,474, Filed July 30, 1985, Cl. 36/033, SOLE CONSTRUCTION FOR SHOES, Johann Ehrlich, Owner of Record: *Patoflex Corp., Cave Creek, Ariz.,* Attorney or Agent: Elliot A. Salter, et al., Ex. Gp.: 247

4,415,705, Re. S.N. 762,350, Filed Aug. 2, 1985, Cl. 525/167.5, ROSIN DERIVATIVES USED AS DISPERSANTS, Fredrick Hutter, Owner of Record: *Inmont Corp., Clifton, N.J.,* Attorney or Agent: Michael R. Chipaloski, Ex. Gp.: 151

4,513,463, Re. S.N. 760,244, Filed July 29, 1985, Cl. 5/452, FLOATATION SLEEP SYSTEM, Philip J. Santo, Owner of Record: *Inventor,* Attorney or Agent: Lawrence P. Kessler, Ex. Gp.: 358

4,514,412, Re. S.N. 760,608, Filed July 30, 1985, Cl. 514/397, SUBSTITUTED IMIDAZOLE DERIVATIVES AND THEIR USE AS ANTI-THROMBOSIS AGENTS, Arto J. Karjalainen, et al., Owner of Record: *Farmos Yhtyma Oy, Turku, Finland,* Attorney or Agent: James E. Armstrong, et al., Ex. Gp.: 125

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,042,864, Reexam. No. 90/000,843, Requested: Aug. 23, 1985, Cl. 318/301, AC-DC TRACTION DRIVE CONTROL SYSTEM, Melvin N. Norris, Owner of Record: *Joy Manufacturing Co., Pittsburgh, Pa.,* Attorney or Agent: None, Ex. Gp.: 210, Requester: National Mine Service Co., Inc., Pittsburgh, Pa.

4,370,368, Reexam. No. 90/000,837, Requested: Aug. 19, 1985, Cl. 428/35, PLASTIC BOTTLES AND PROCESS FOR PREPARATION THEREOF, Sadao Hirata, et al., Owner of Record: *Toyo Seikan Kaisha, Ltd., Tokyo, Japan,* Attorney or Agent: Sherman & Shalloway, Ex. Gp.: 150, Requester: Wood, Herron, et al., Cincinnati, Ohio

4,478,889, Reexam. No. 90/000,839, Requested: Aug. 19, 1985, Cl. 427/230, PROCESS FOR PREPARATION OF COATED PLASTIC CONTAINER, Yoshitugu Maruhashi, et al., Owner of Record: *Toyo Seikan Kaisha, Ltd., Tokyo, Japan,* Attorney or Agent: Sherman & Shalloway, Ex. Gp.: 150, Requester: Wood, Herron, et al., Cincinnati, Ohio

Errata

The following registration number, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of Feb. 12, 1985, was listed inadvertently:

1,320,040	TM 380	Feb. 12, 1985

Consequently, the certificate of registration bearing the above-identified registration number was not issued on the dated indicated, and the registration number has been vacated.

PATRICIA M. DAVIS,
Aug. 20, 1985. *Administrator for Trademark Operations.*

Listing of Commercial Bonded Draftsmen

The following listing of bonded draftsmen supersedes the listing published on Apr. 10, 1984, at 1041 O.G. 11:

American Future Design Co.
P.O. Box 365
1400 Ramsey Dr.
Mayo, Md. 21106
(301) 261-4975

John A. Ballard
432 Harry S. Truman Dr.
Largo, Md. 20772
(301) 336-7312

Anthony L. Costantino
12006 Lafayette Ct.
Silver Spring, Md. 20902

Draft-Art, Inc.
South Square
Woodstock, Va. 22664
(703) 459-2080

Fleit & Jacobson, Cohn & Price
1217 E St., N.W.
Washington, D.C. 20004
(202) 638-6666

Graphics By Gallo
1800 B. Swann St., N.W.
Washington, D.C. 20009
(202) 234-7700

John A. Haigh
9513 Brunett Ave.
Silver Spring, Md. 20901
(301) 588-6739

Ellsworth G. Jackson
101 Rittenhouse St., N.E.
Washington, D.C. 20011
(202) 726-0908

Kostolnik Associates
2575 S. Shirlington Rd.
Arlington, Va. 22202
(703) 920-8155

Robert MacCollum
Patent Drafting Service
1911 Jefferson Davis Hwy.
Suite 700
Arlington, Va. 22202
(703) 521-1115

Mil-R Production
2107 Mt. Vernon Ave.
Alexandria, Va. 22301
(703) 548-3879

Gerald M. Murphy
P.O. Box 2098
Eads St. Station
Arlington, Va. 22202

Suzanne Nahmias
701 S. 23rd St.
Arlington, Va. 22202
(703) 521-7802

Oliver Patent Drafting Service
1205 Darlington St.
Forestville, Md. 20747
(301) 336-0351

Patent Reproduction Co.
26 N St., S.E.
Washington, D.C. 20003
(202) 488-7096

Quality Patent Printing
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Arlington, Va. 22202
(703) 892-6212

Quinn Patent Drawing Service Co.
P.O. Box 1435
Alexandria, Va. 22313
(703) 548-3766

Karen L. Robertson
P.O. Box 1098
Eads St. Station
Arlington, Va. 22202

Campbell Philip Sweet
1755 S. Jefferson Davis Hwy.
Crystal Sq. 5, Suite 400
Arlington, Va. 22202
(703)521-5940

W. R. Taggert
9801 S. A1A, Lot 795-2
Jensen Beach, Fla. 33457

Aug. 23, 1985.

THERESA A. BRELSFORD,
Assistant Commissioner, for Administration.

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 50716-5116]
Variety Naming Requirements for Plant Patent Applications

Agency: Patent and Trademark Office, Commerce.
Action: Notice of proposed rulemaking.
Summary: The Patent and Trademark Office proposes to amend certain of the rules of practice for plant patent applications. Under the proposed rules of practice, an applicant for a plant patent will, in addition to the present requirements for obtaining a plant patent, also be required to designate and record a variety name for the plant. These proposed rules fulfill an obligation imposed by the Convention of the International Union for the Protection of New Plant Varieties, to which the United States adheres.
Date: Comments on the proposed rules must be submitted by Oct. 31, 1985, to assure their consideration in formulating the rules put into effect.
Addresses: Address comments to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231. All comments received will be made publicly available in the Patent and Trademark office, Crystal Plz., Arlington, Va., Rm. 3-11C28. No public hearing is planned.
For Further Information Contact: Mr. Stanley D. Schlosser, Office of Legislation and International Affairs, by telephone at (703) 557-3065 or by mail addressed to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.
Supplementary Information: The requirement for designating a variety by name and recording that name arises from Article 13 of the UPOV (International Union for the Protection of New Plant Varieties) Convention. This Convention became applicable to the United States on Nov. 8, 1981. In the terminology of Article 13, this designation and recordation is referred to as the registration of the variety name. Registration is required for each plant variety protected in a member state of this Union (hereafter referred to as a member state) either by means of a plant patent or an award of breeders' rights.

It is left to each member state to determine exactly how registration will be effected. For the United States, the issuance of a plant patent, including in the patent the name of the variety patented, will constitute registration. The patent examining process will include a consideration of the suitability for registration of the proposed variety name.

A variety name will be registered if it is judged by the Patent and Trademark Office as not likely to mislead or cause confusion regarding the characteristics, value or identity of the variety, or the identity of the breeder. Also, a variety name to the registered must not impair or conflict with any trademark or another name in which other person has a proprietary right. Ordinarily, the patent applicant will be required to register the same variety name (or a translation thereof) for a particular variety in each member state adhering to the UPOV Convention. These are, in broad terms, the conditions set forth in UPOV Article 13 for the registration of a variety name.

A variety name is the generic name by which the variety is popularly or commonly known. The commercial use of a registered variety name, however, will not be regulated by the Patent and Trademark Office. Rather, use of a variety name, whether registered or unregistered (in cases where the variety is not patented), will be

regulated by any applicable state and federal unfair competition and trademark laws.

Variety names are referred to in the UPOV Convention as "variety denominations" and often in plant breeding circles as "cultivar names." For the purposes of these rules of practice, the three terms are considered synonymous.

Attention is called to the Commissioner's Notice (**Federal Register**/Vol. 46, No. 22/Oct. 20, 1981) stating that appropriate rules for the naming of plant varieties, as required by the UPOV Convention, will be issued. The **Federal Register** Notice also provides information about interim procedures to be followed until rules of practice are adopted.

The proposed amendments to the rules of practice when finally adopted will replace the interim procedures announced in the **Federal Register** on Oct. 20, 1981, in regard to the patenting in the United States of asexually reproduced plants. These proposed amendments will not apply, however, to any protection sought under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.), administered by the Department of Agriculture and applying only to sexually reproduced plant varieties.

The proposed amendment to §1.163 prescribes the obligation (as set forth in the UPOV Convention) for registering the name of each patented plant variety. The proposed name will be selected by the patent applicant for inclusion in the title of the application, where it will be easiest for a reader of the patent to find. It will be judged for registrability by the examiner to whom the patent application is assigned for examination, who, however, may receive advice or information from officials of the trademark examining operation. As examples of suitable naming practice, note the titles of plant patents Nos. 5,413 and 5,414, "Plum Tree 'Mr. Paul' " and "Chrysanthemum Plant Named Foxy," respectively.

The requirement for registration applies only to plant patent applications actually filed in the United States on or after Nov. 1, 1981, the date on which the UPOV Convention took effect for the United States, even though the application may be entitled to an earlier United States filing date under the provisions of 35 U.S.C. 120, or claim the right of priority in accordance with 35 U.S.C. 119.

The procedure for judging registrability of a variety name will utilize the Office's compilation of variety names in use in the United States and foreign countries. This compilation has been and will continue to be obtained from horticultural, agriculture, floral and other professional societies, other national examination offices, the UPOV Secretariat, standard references, and other sources. Designation of a variety by name is a formal requirement for obtaining a patent, and will be generally administered in the same manner as other formal requirements.

Proposed new §1.166(a) sets forth the requirement for naming a variety to be patented. The criteria to be applied will be those set forth in the International Code of Nomenclature for Cultivated Plants—1980. Its articles 1 to 32 provide substantive rules for naming varieties. The other articles, concerned with non-statutory registration authorities, earlier publication, amendment of the Code and other matters unrelated to the registration criteria, of course, will not be involved. Copies of the Code are available from any of the following: The International Bureau for Plant Taxonomy and Nomenclature, Tweede Transitorium, Uithof, Utrecht, Netherlands; the American Horticultural Society, Mt. Vernon, Va. 22121; the Crop Science Society of America, 677 S. Sego Rd., Madison, Wis. 53711; and the Royal Horticultural Society, Vincent Sq., London, SW IP, 2PE, Great Britain.

Registrability will also take into account the Office's file of both registered trademarks and those proposed for registration. If a conflict exists between a proposed variety name and a registered trademark or one proposed for registration, the variety name will not be registered and a new name will be required.

Proposed §1.168(b) concerns patent applications failing to include a proposed variety name. The examiner will require the submission of a variety name and set a period for compliance.

Proposed §1.168(c) and (d) concern an examiner's refusal to register a proposed variety name. Paragraph (c) requires the applicant, upon a final determination of unregistrability, to submit another variety name. Paragraph (d) assures the applicant's right instead to petition the Commissioner in cases where the proposed name is not accepted. The petition will be subject to a fee and the other requirements of these rules applicable to petitions.

The UPOV Convention requires the breeder to identify the patented variety by the same variety (or a translation thereof) in all member states. A different name may be registered in a particular member state, however, in cases where the name registered earlier in another member state is unsuitable for registration. The Convention's requirements for the consistent naming of varieties are incorporated in proposed §1.168(e). The applicant may during the course of prosecuting the application be required to inform the Office of any other names by which the variety is known, either in the United States or foreign countries, and to provide a translation into English of any such names.

Specific criteria for unsuitability cannot always be defined in advance, but must develop on a case-by-case basis. Certain criteria for unsuitability can be stated at the outset, however. Names that are difficult to pronounce by English speakers, names having adverse business connotations, and names in non-English characters are examples of unsuitability. The applicant must when submitting a name for registration different from that used in another member state explain in writing why the name used in that other state is unsuitable.

A patent owner or the assignee of a patent will, at times, learn that the registered variety name conflicts with another person's trademark or other proprietary right, or be ordered by a court to commercialize the variety under another name. At other times, a registered variety name may turn out to conflict with an earlier-registered variety name or one already in use. Also, changes in language or custom may render an earlier-registered variety name unsuitable for commercial use. In these cases, a different or substitute name may be submitted for registration. Proposed §1.168(f) concerns the issuance of a certificate of correction under 35 U.S.C. 255 for the registration of a substitute name in such situations. The patent owner in applying for the registration of a substitute name will be required to explain in writing why it is necessary to do so.

It is, of course, in the patent applicant's interest to know or learn as early as possible if the proposed variety name conflicts with another's trademark or other proprietary right. Accordingly, proposed §1.168(g) authorizes the Patent and Trademark Office to publish in the *Trademark Official Gazette* each proposed variety name. The Office will also regularly publish in the *Trademark Official Gazette* lists of registered variety names, and such names will be identified in each plant patent and in the *Patent Official Gazette.*

The publication of proposed variety names should greatly reduce the possibility of later conflicts. Conflicts between proposed variety names and proprietary rights will be resolved in an ex parte manner. No inter partes proceedings will be held to resolve a conflict.

Any substitute name registered for a variety will also be published in the *Trademark Official Gazette,* and a certificate of correction containing the substitute name will be issued. If the patent has been assigned, the opportunity to register a different variety name will be available only to the assignee.

In the event a plant breeder proceeds to protect a plant variety under the provisions of section 101 of the patent laws (title 35, U.S.C), the variety naming requirements of these proposed rules shall also apply to that patent application. This possibility is acknowledged in the proposed amendment to section 1.71. Applications for the patenting of microorganisms under section 101 will, however, not be subjected to this variety naming requirement.

Article 13 of the UPOV Convention of Oct. 23, 1978, referred to above, reads:

Article 13
Variety Denomination

(1) The variety shall be designated by a denomination destined to be its generic designation. Each member State of the Union shall ensure that subject to paragraph (4) no rights in the designation registered as the denomination of the variety shall hamper the free use of the denomination in connection with the variety, even after the expiration of the protection.

(2) The denomination must enable the variety to be identified. It may not consist solely of figures except where this is an established practice for designating varieties. It must not be liable to mislead or to cause confusion concerning the characteristics, value or identity of the variety or the identity of the breeder. In particular, it must be different from every denomination which designates, in any member State of the Union, an existing variety of the same botanical species or of a closely related species.

(3) The denomination of the variety shall be submitted by the breeder to the authority referred to in Article 30(1)(b). If it is found that such denomination does not satisfy the requirements of paragraph (2), that authority shall refuse to register it and shall require the breeder to propose another denomination within a prescribed period. The denomination shall be registered at the same time as the title of protection is issued in accordance with the provisions of Article 7.

(4) Prior rights of third parties shall not be affected. If, by reason of a prior right, the use of the denomination of a variety is forbidden to a person who, in accordance with the provisions of paragraph (7), is obliged to use it, the authority referred to in Article 30(1)(b) shall require the breeder to submit another denomination for the variety.

(5) A variety must be submitted in member States of the Union under the same denomination. The authority referred to in Article 30(1)(b) shall register the denomination so submitted, unless it considers that denomination unsuitable in its State. In the latter case, it may require the breeder to submit another denomination.

(6) The authority referred to in Article 30(1)(b) shall ensure that all the other such authorities are informed of matters concerning variety denominations, in particular the submission, registration and cancellation of denominations. Any authority referred to in Article 30(1)(b) may address its observations, if any, on the registration of a denomination to the authority which communicated that denomination.

(7) Any person who, in a member State of the Union, offers for sale or markets reproductive or vegetative propagating material of a variety protected in that State shall be obliged to use the denomination of that variety, even after the expiration of the protection of that variety, in so far as, in accordance with the provisions of paragraph (4), prior rights do not prevent such use.

(8) When the variety is offered for sale or marketed, it shall be permitted to associate a trademark, trade name or other similar indication with a registered variety denomination. If such an indication is so associated, the denomination must nevertheless be easily recognizable.

UPOV Article 30(1)(b), referred to in Article 13, reads as follows:

Article 30

Implementation of the Convention on the Domestic Level; Contracts on the Joint Utilisation of Examination Services

(1) Each member State of the Union shall adopt all measures necessary for the application of this Convention; in particular, it shall:

(a). . .

(b) set up a special authority for the protection of new varieties of plants or entrust such protection to an existing authority;

(c). . .

Other Considerations: The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, et seq. There are no information collection requirements in the proposed rule change.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the proposed rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The variety naming requirement will impose very little or no extra work on patent applicants (whether small or large businesses or individuals). The rule will help avoid litigation over variety names and trademark rights, which are far more burdensome than the procedures under the proposed rule.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patients.

For the reasons set out in the preamble, 37 CFR Part 1 is proposed to be amended by amending §§1.71, 1.163, 1.168 and 1.17 as set forth below. All proposed additions are printed between arrows.

Part 1—Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C., unless otherwise noted.

2. Section 1.17 is proposed to be amended by adding the following items in numerical order to the list in paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) * * *

►—1.168(d) For petitioning the Commissioner to register a plant variety name. . . .

—§1.168(e) For petitioning the Commissioner to register a substitute plant variety name. . . .◄

* * * * *

3. Section 1.17 is proposed to be amended by adding paragraph (d) to read as follows:

§1.71 Detailed description and specification of the invention.

* * * * *

►(d) In the case of an application for the patenting of a plant variety filed under the provisions of section 101 of title 35, United States Code, the requirements for the naming of a variety specified under §§1.163 and 1.168 shall apply thereto.◄

4. Section 1.163 is proposed to be amended by adding the following three sentences at the end of paragraph (a):

§1.163 Specification

(a)* * * ►The title of the invention must include a proposed name for the variety to be patented, where it may be easily recognized as such. A substitute variety name may be proposed during the pendency of the application provided its consideration will not significantly delay disposition of the application. The granting of the patent will be deemed the registration of the variety name for the patented plant for purposes of complying with Article 13 of the International Convention for the Protection of New Varieties of Plants (UPOV), as revised on Oct. 23, 1978.◄

* * * * *

5. A new §1.168 is proposed to be added, which reads as follows:

►§1.168 Variety name, submission to the Office, examination.

(a) The variety name submitted by the patent applicant under §1.163 or §1.71(d) will be examined for compliance with §1.163 using as guidelines for this examination the cultivar naming requirements of the International Code of Nomenclature for Cultivated Plants —1980.

(b) If a proposed variety name is not included as part of the title of the application, as filed, the examiner will set a period of not less than thirty days for providing such name.

(c) If the examiner determines that a proposed variety name is not suitable for registration, or that the proposed name conflicts with a registered trademark or a trademark proposed for registration, the examiner shall refuse registration and set forth in an Office action the reasons for such refusal. Such reasons shall be included in the examiner's action provided under §1.104, subject to the provisions of §1.105. An applicant in disagreement with such refusal may request reconsideration and withdrawal of the refusal, giving the reasons therefor. If the examiner's refusal to register a proposed variety name is repeated and made final, the examiner will at the same time require the applicant to propose another variety name for registration.

(d) After a final requirement by the examiner for submission of a proposed new variety name, the applicant, in addition to making any response due on the remainder of the action, may in lieu of proposing a new variety name petition the Commissioner for review of the examiner's holding together with the fee set forth in §1.17(h).

(e) The applicant will be required to submit for registration the same variety name (or a translation thereof) as that previously registered or proposed for registration in an earlier filed application for protection of the variety in another UPOV member state. Such applicant may submit another name for registration, however, upon a showing satisfactory to the examiner as to why the name originally submitted in another UPOV member state is unsuitable for registration. During the pendency of an application, the examiner may require the applicant to provide any name for the same variety registered or proposed for registration in other UPOV member states before the United States application was filed. If not in English characters, a translation or transliteration of such name or names may be required. An applicant dissatisfied with the examiner's decision concerning the unsuitability of a variety name may petition the Commissioner, together with that fee set forth in §1.17(h).

(f) A patentee, in order to avoid a conflict between a registered variety name and a trademark, or where the registered variety name is likely to be confused with another variety name, or where a registered variety name had acquired an adverse connotation, may propose for registration a substitute variety name for that already registered. Such a proposal shall be in the form of a petition to the Commissioner, together with the fee set forth in §1.17(h). The proposed substitute name will be examined in the same manner as the name originally registered, and upon registration shall be promptly published in the *Official Gazette.* A certificate of correction indicating such substitute name shall be issued for the patent. If the patent has been assigned, only the assignee of record may apply for registration of a substitute name.

(g) The Commissioner shall upon its receipt in the Office promptly publish in the *Trademark Official Gazette* any variety name proposed for registration and the genus and species of the plant involved. Correspondence from a person other than the patent applicant concerning the registrability of a proposed or registered variety name shall be served on the applicant by such person and a certificate of such service shall appear on the copy of the correspondence filed in the Patent and Trademark Office. Such correspondence will be placed in the official file, and in the case of an application will be considered by the examiner in an ex parte manner during the examination of the application.◄

July 11, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patent and Trademarks.

[FR Doc. 85-19401 Filed 8-1585; 8:45 am]
Billing Code 3510-16-M

Status of PTO Services

The following is an update of the status of PTO services for August 1985:

Service Item	FY 1985 Performance Goal (Calendar Days)	Monthly Average	Comment
Filing Receipts:			
Patents	22	19	
Trademarks	30	41	Tapes received late from contractor.
Patent/Trademark Copies:			
Special Window Coupons	1*	99% within 1 day	
Window Coupons	5	97% within 5 days	
Mail Coupons	29 (26)*	99% within 26 days**	
Letter Orders	34 (26)*	99% within 26 days**	
Date of oldest unfilled order		Aug. 19, 1985	
Current Mail Date being processed		Aug. 23, 1985	
Certified Copies:			
Trademark Registrations	30	29	
Applications-As-Filed	20 (10)*	99% within 7 days	
File-Wrapper/Contents	N/A	89% within 7 days	
Walk-up Certification	1	78% within 24 hours	Delays due to vacations.
Trademark Search Library:			
Filing Pending Marks	21	35	Automation contractor has not been on schedule.
Filing Reg. Certificates	3 (Issue Date)*	On schedule	
Assignments:			
Patents	25 (20)*	18	
Trademarks	25 (20)*	17	
Avg. Days from Issue Fee Payment to Issue Date	90-100	87	
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On schedule	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	On schedule	
Patent Grants Mailed	Issue Date	On schedule	
Trademark Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	On schedule	
Trademark Regs. Mailed	Issue Date	3 days late	Delayed to account for all withdrawals.
Patent Copies Available	Issue Date	96% on Issue Date	
Trademark Copies Available	Issue Date	99% on Issue Date	

*Reflects new goal for faster service.
**Figures include postal processing and delivery time.

IMPROVEMENTS TO SERVICES

- *Goals for Faster Service* — One of our special service objectives for this year was to commit to goals for faster service. As you will note on the report above, seven goals have been reduced. We will continue to look for ways to expedite services, as well as improve quality.

HELPFUL HINTS FROM THE PTO

- *Withdrawal of Attorney* — To expedite the handling of request for permission to withdraw as attorney under 37 CFR §1.36, submit the request in triplicate (original and two copies) and indicate thereon the present mailing addresses of the attorney who is withdrawing and of the applicant. The examining group number should also appear on all such requests. Because the Office does not recognize law firms, each attorney of record must sign the notice of withdrawal, or the notice of withdrawal must contain a clear indication of one attorney signing on behalf of another.

  A request to withdraw is effective when approved rather than when received. This is particularly important when such requests are submitted toward the end of the period for response. There should be at least thirty days

between approval of withdrawal and the expiration date of a time response period so that the applicant will have sufficient time to obtain other representation or take other action. If less than thirty days remain in a running response period, a request to withdraw is normally disapproved.

It would be helpful if a request and fee, preferably an authorization to charge a deposit account, were included with a request to withdraw. Such would permit the Office to make sure, in most instances, that sufficient time remains in the period for response.

Sept. 3, 1985.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 24, 1985

Re. 31,336	4,474,923	4,498,338	4,513,328
D. 270,489	4,474,982	4,500,421	4,513,532
D. 276,717	4,475,127	4,500,723	4,513,557
D. 277,571	4,475,737	4,501,500	4,513,866
D . 278,610	4,476,091	4,501,585	4,514,118
D. 278,993	4,476,992	4,501,896	4,514,319
3,970,692	4,477,626	4,502,363	4,514,719
3,987,854	4,478,842	4,502,702	4,514,813
4,255,474	4,479,186	4,503,031	4,515,564
4,287,261	4,480,494	4,503,472	4,515,710
4,296,007	4,480,929	4,503,847	4,516,167
4,303,653	4,481,049	4,504,475	4,516,300
4,320,017	4,482,549	4,504,506	4,516,498
4,323,684	4,483,569	4,504,669	4,516,648
4,327,792	4,483,645	4,505,434	4,516,801
4,361,608	4,483,710	4,505,944	4,516,910
4,362,830	4,483,741	4,506,959	4,517,147
4,369,231	4,484,567	4,507,011	4,517,655
4,379,572	4,485,215	4,507,405	4,517,736
4,385,451	4,486,346	4,507,530	4,517,886
4,393,182	4,486,425	4,507,725	4,518,050
4,398,359	4,486,524	4,507,728	4,518,070
4,402,838	4,487,313	4,507,859	4,518,206
4,408,627	4,487,934	4,507,964	4,518,334
4,412,074	4,488,821	4,508,513	4,518,595
4,419,124	4,489,816	4,508,737	4,518,994
4,424,150	4,489,870	4,509,237	4,519,959
4,426,480	4,491,459	4,509,524	4,520,077
4,436,787	4,492,235	4,510,063	4,520,503
4,436,813	4,492,775	4,510,094	4,520,758
4,439,790	4,493,089	4,510,219	4,521,557
4,442,187	4,493,392	4,510,587	4,521,878
4,443,455	4,493,761	4,510,640	4,522,350
4,449,774	4,493,844	4,510,980	4,522,441
4,449,805	4,494,443	4,510,986	4,522,526
4,455,499	4,494,619	4,511,202	4,522,568
4,456,803	4,495,431	4,511,381	4,523,337
4,460,569	4,495,680	4,511,442	4,523,799
4,460,955	4,495,751	4,511,620	4,524,221
4,462,821	4,495,987	4,511,887	4,524,240
4,463,722	4,496,360	4,511,923	4,524,371
4,468,353	4,496,566	4,512,173	4,524,673
4,469,026	4,496,661	4,512,784	4,524,750
4,471,042	4,496,723	4,512,855	4,525,074
4,472,813	4,497,223	4,512,925	4,526,287
4,473,558	4,498,122	4,513,187	

Disclaimers

3,776,749.—*Robert Bruce McKay,* Kilmarnock; and *Gordon Frank Bradley,* Paisley, Scotland. DIARYLIDE PIGMENT COMPOSITIONS. Patent dated Dec. 4, 1973. Disclaimer filed July 16, 1985, by the assignee, *Ciba-Geigy AG.*

Hereby enters this disclaimer to all claims of said patent.

4,022,011.—*Hironori Hirai,* Nagaokakyoshi, Kyoto, Japan. YARN PIECING METHOD FOR OPEN-END SPINNING MACHINE. Patent dated May 10, 1977. Disclaimer filed Dec. 24, 1984, by the assignee, *Spindelfabrik Suessen-Schun, Stahlecker & Grill G.m.b.H.*

The term of this patent subsequent to Oct. 17, 1984, has been disclaimed.

4,035,591.—*Gordon S. Carbonneau,* Grand Rapids, Mich. ELECTROACOUSTIC TRANSDUCERS. Patent dated July 12, 1977. Disclaimer filed July 8, 1985, by the assignee, *Carbonneau Industries, Inc.*

Hereby enters this disclaimer to claims 1, 2 and 6 of said patent.

4,340,067.—*Christen C. Rattenborg,* Chicago, Ill. BLOOD COLLECTION SYRINGE. Patent dated July 20, 1982. Disclaimer filed Aug. 9, 1985, by the assignee, *Marquest Medical Products, Inc.*

Hereby enters this disclaimer to claims 1, 2, 4, 6, 8, 9, 11, 12, 15, 18, 25 and 27 of said patent.

4,431,283.–*Takeo Hoda, Nobuyuki Taniguchi,* and *Kiyoshi Seigenji,* Osaka, Japan. FILM CARTRIDGES, FILMS AND CAMERAS ADAPTED FOR USE THEREWITH. Patent dated Feb. 14, 1984. Disclaimer filed July 18, 1985, by the assignee, *Minolta Camera Kabushiki Kaisha.*

Hereby enters this disclaimer to claim 9 of said patent.

4,432,818.—*James R. Givens,* Tucson, Ariz. COMPOSITIONS FOR USE IN HEAT-GENERATING REACTIONS. Patent dated Feb. 21, 1984. Disclaimer filed Nov. 19, 1984, by the assignee, *Hughes Aircraft Co.*

Hereby enters this disclaimer to claims 1–23 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF August 17, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	12-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	11-30-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-22-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-17-82
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	11-29-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	2-22-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	5-16-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-10-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-15-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	4-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during July 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,395,406 to 3,399,405, inclusive

Plant Patents ..... Numbers 2,825 to 2,829 inclusive

REEXAMINATIONS

SEPTEMBER 24, 1985

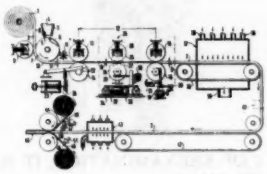
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,906,134 (389th)

WELDABILITY OF ARTICLES MADE FROM PLASTIC FOAMS

Gerhard Pohl, Giessen, Fed. Rep. of Germany, assignor to Zwissler Ulrich Dr., Gerstetten, Fed. Rep. of Germany

Reexamination Request No. 90/000,537, Apr. 4, 1984.
Reexamination Certificate for Patent No. 3,906,134, issued Sep. 16, 1975, Ser. No. 240,656, Apr. 3, 1972.
Filed Apr. 4, 1984, Ser. No. 240,656
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1971, 2116092; May 13, 1971, 2123845
Int. Cl.[4] B32B *7/14, 33/00*
U.S. Cl. 156—229



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **3–5** and **12–14** is confirmed.

Claims **1, 2, 6–11, 15** and **16** are cancelled.

3. A process of improving weldability of a flexible foam article in which the foam structure contains at least some open cells which comprises bringing a moving foam web of soft polyurethane foam with at least largely open cells into contact with a welding aid in the form of a finely divided vinyl chloride-vinyl acetate copolymer so that the welding aid is applied to one of the two large surfaces of the foam web, the foam web, arranged so that the large surface to which the welding aid has been applied is lying on top, distorting said foam web in a horizontal plane and in the operative direction in as least one distortion zone so that the open cells of the soft polyurethane foam assume cross sections such that at least a substantial proportion of the finely divided welding aid penetrates into the interior of the web, applying said finely divided welding aid to the other large surface of the foam web and introducing it into the interior of the foam web in substantially the same manner as into the first large surface, and passing the foam web to a relaxation zone in which it at least resumes its predistortion shape.

B1 4,075,236 (390th)

CONTINUOUS MANUFACTURE OF PEROXYESTERS

Uday D. Wagle, Grand Island, and Venkatram Ramdas, Tonawanda, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

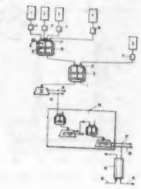
Reexamination Request No. 90/000,562, May 24, 1984.
Reexamination Certificate for Patent No. 4,075,236, issued Feb. 21, 1978, Ser. No. 728,349, Sep. 30, 1976.
Int. Cl.[4] C07C *179/18*
U.S. Cl. 260—453 RZ

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 2,** and **9** are determined to be patentable as amended.

Claims **3–8,** dependent on an amended claim, are determined to be patentable.

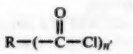
1. A process for the continuous manufacture of a peroxyester having the formula



$$R_y-(C-OO)_nR'_x$$

wherein:

(a) x, y and n are 1 or 2;
(b) when x is 2, y is 1 and n is 2;
(c) when y is 2, x is 1 and n is 2;
(d) when x, y and n are 1, R is selected from the group consisting of a primary, secondary, or tertiary alkyl of 1 to 17 carbons, aryl of 6 to 14 carbons, and cycloalkyl of 3 to 12 carbons, and R′ is selected from the group consisting of a tertiary alkyl of 4 to 12 carbons, a tertiary aralkyl of 9 to 18 carbons, and tertiary cycloalkyl of 6 to 12 carbons;
(e) when x is 2, R is a diradical selected from alkylene of 1 to 16 carbons, arylene of 6 to 14 carbons, cycloalkylene of 3 to 12 carbons, and aralkylene of 7 to 18 carbons; and
(f) when y is 2, R′ is a di-tertiary diradical selected from alkylene of 6 to 16 carbons, aralkylene of 12 to 18 carbons, and cycloalkylene of 7 to 12 carbons; which comprises:
(I) continuously reacting an acid chloride having the formula



$$R-(-C-Cl)_{n'}$$

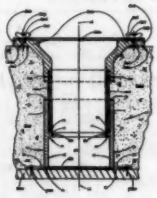
a hydroperoxide having the formula $R'(OOH)_n$, and an aqueous alkali metal hydroxide in two reaction zones of intense mixing connected in series in a temperature range of about −10° to +50° C. and a pH of 10 to 14, wherein the first reaction zone is maintained in the upper part of the temperature range and the second reaction zone is maintained in the lower part of the temperature range;
(II) continuously recovering the peroxyester product by
(i) continuously feeding the reaction mixture directly from the second reaction zone through a liquid-liquid separation unit;
(ii) continuously subjecting the product stream from the liquid-liquid separation unit to a series of washings and separations in a mixer-settler system; [and]
(iii) continuously gas stripping the product from the the mixer-settler system in a stripping column; and
(iv) continuously adding the acid chloride, hydroperoxide and aqueous alkali metal hydroxide to the first reaction zone to replace that used up in the reaction effluent.

B1 4,261,598 (391st)

CONCRETE FLOOR EMBEDDED COUPLING FOR PLASTIC PIPE

Kenneth R. Cornwall, 30064 Bentley, Livonia, Mich. 48154

Reexamination Request No. 90/000,565, May 30, 1984.
Reexamination Certificate for Patent No. 4,261,598, issued Apr. 14, 1981, Ser. No. 64,080, Aug. 6, 1979.
Int. Cl.[4] F16L *55/07*
U.S. Cl. 285—56



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **4–11** is confirmed.

Claims **1–3** are cancelled.

4. The method of joining plastic pipe having spaced apart cylindrical inside and outside walls with a concrete floor which comprises:

(a) providing a form adapted for pouring of concrete slab,

(b) placing a coupling for plastic pipe on the form which coupling includes a tube having an inside cylindrical wall defining a cylindrical longitudinal axis an outside wall and opposing ends between the walls wherein the inside wall of the tube mates with the outside wall of the pipe, an integral annular rim between the ends and around the inside wall of the tube with two spaced apart parallel shoulders which are perpendicular to the axis of the tube and with an annular face between the shoulders and which is parallel to the axis of the tube, wherein the shoulders of the annular rim have a height which is approximately the same as the spaced apart walls of the pipe with which the coupling is to be used such that the annular face is in a fluid flow path with the pipe attachment means at one end of the tube adapted for securing the coupling to the form using connector means;

(c) bonding the outside wall of a length of plastic pipe to the inside wall of the coupling at one end of the tube such that an end of the length of pipe abuts against one shoulder of the annular rim; and

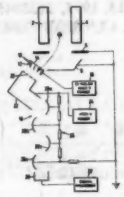
(d) pouring the concrete floor over the form and around the coupling and allowing the concrete to set.

B1 4,267,448 (392nd)

ION DETECTOR WITH BIPOLAR ACCELERATING ELECTRODE

Karl Feser, Hamburg, and Curt Brunnée, Platjenwerbe, both of Fed. Rep. of Germany, assignors to Finnigan Mat GmbH, Bremen, Fed. Rep. of Germany

Reexamination Request No. 90/000,602, Aug. 3, 1984.
Reexamination Certificate for Patent No. 4,267,448, issued May 12, 1981, Ser. No. 45,144, Jun. 4, 1979.
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825760
Int. Cl.[3] B01D *59/44*
U.S. Cl. 250—281



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **8** is cancelled.

Claims **1** and **9–11** are determined to be patentable as amended.

Claims **2–7**, dependent on an amended claim, are determined to be patentable.

1. An apparatus for detecting ions generated by mass spectrometers, comprising: a conversion element which the ions strike, *negative ions impacting said conversion element to be converted to positively charged ions,* a secondary electron multiplier disposed after the conversion element in the direction of ion travel, said electron multiplier having an output that approaches ground potential, a high voltage source for the secondary electron multiplier, said conversion element comprising an accelerating electrode (**10**, **34**, **38**) disposed before and adjacent to the input of the secondary electron multiplier (**18**), and a separate, selective bi-polarity high voltage source (**16**) connected to the accelerating electrode, said accelerating electrode being impressed with a potential more negative than a first dynode of the secondary electron multiplier when detecting positive ions, and being impressed with a potential more positive than said first dynode when detecting negative ions.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,988

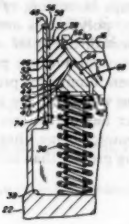
RAILWAY TRUCK BOLSTER FRICTION ASSEMBLY

Donald Wiebe, Sewickley, Pa., assignor to A. Stucki Company, Pittsburgh, Pa.

Original No. 4,295,429, dated Oct. 20, 1981, Ser. No. 133,268, Mar. 24, 1980. Application for reissue Jun. 8, 1983, Ser. No. 502,423

Int. Cl.⁴ B60F *3/00*

U.S. Cl. 105—197 DB **18 Claims**



11. In a friction assembly adapted for use in a railway truck intermediate a longitudinal end portion of an elongated truck bolster and an adjacent column guide portion of a truck side frame to provide frictional damping of relative vertical and lateral motion between the bolster and the side frame, the combination comprising:

a friction element adapted to be retained with respect to such a longitudinal end portion of such a bolster;

a wear surface means adapted to be retained with respect to such an adjacent column guide portion of such a side frame;

bias means operable to maintain frictional engagement between said friction element and said wear surface means throughout such relative motion between such a bolster and such a side frame;

said friction element being relatively movable in opposite lateral directions with respect to said wear surface means while in frictional engagement therewith during such relative motion between such a bolster and such a side frame;

and said wear surface means and adjacent portions of said friction element being configured to continuously increase the magnitude of friction between said wear surface means and at least a portion of said friction element during relative lateral motion therebetween throughout a range of such lateral motion in either of such opposite lateral directions.

Re. 31,989

MOTORCYCLE ENGINE EXHAUST SYSTEM

Kazuhiko Nomura, Iwata, and Satoru Ichikawa, Hamamatsu, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

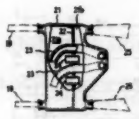
Original No. 4,422,519, dated Dec. 27, 1983, Ser. No. 343,020, Jan. 26, 1982. Continuation of Ser. No. 78,697, Sep. 25, 1979, abandoned. Application for reissue Aug. 22, 1984, Ser. No. 643,411

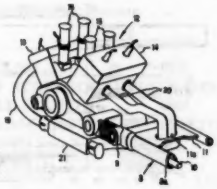
Claims priority, application Japan, Sep. 29, 1978, 53-119181

Int. Cl.⁴ B62D *61/02*; F01N *1/08, 7/08*

U.S. Cl. 180—219 **21 Claims**

15. In combination with a motorcycle of the type having a frame portion, a front wheel dirigibly supported by said frame, a V-type engine supported by said frame with its crankshaft axis extending transversely to said frame, trailing arm means pivotally connected to said frame for pivotal movement about a transversely extending pivot axis, and a rear wheel journaled by said trailing arm means, an exhaust system comprising an exhaust device extending transversely across said frame for substantially the entire width of said frame and juxtaposed at a level below that of said engine and in proximity to said trailing arm pivot axis, a front bank exhaust pipe extending from the front bank of said engine downwardly and





terminating in said exhaust device, a rear bank exhaust pipe extending downwardly into said exhaust device, said rear bank exhaust pipe being positioned ahead of the said rear wheel, and a tailpipe discharging rearwardly from said exhaust device.

Re. 31,990

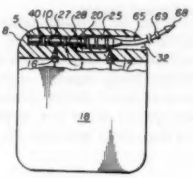
MULTIPLE FUNCTION LEAD ASSEMBLY AND METHOD FOR INSERTING ASSEMBLY INTO AN IMPLANTABLE TISSUE STIMULATOR

James E. Sluetz, Lake Jackson, and Richard V. Calfee, Houston, both of Tex., assignors to Intermedics, Inc., Angleton, Tex.

Original No. 4,236,525, dated Dec. 2, 1980, Ser. No. 963,128, Nov. 22, 1978. Application for reissue Aug. 18, 1982, Ser. No. 409,162

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 P **21 Claims**



1. Apparatus for connecting a body implantable tissue stimulator and lead assembly, comprising

at least two distal electrodes on said lead assembly for electrical stimulation or sensing,

at least [two] *three* coaxial proximal connectors on said lead assembly spaced apart and [electrically] *conductively* connected to said distal electrodes for connecting said distal electrodes with said *implantable* tissue [stimulation means] *stimulator, two of said three proximal connectors conductively connected to one of said two distal electrodes and the remaining one of said three proximal connectors conductively connected to the other of said two distal electrodes,*

a female connector assembly [on] *of* said body implantable tissue stimulator [adapted to electrically connect] *for conductively connecting at least two of* said proximal connectors to said stimulator,

insulator means intermediate adjacent ones of said coaxial proximal connectors [having fluid sealing ribs cooperating with said female connector assembly] for maintaining fluid isolation between said connectors.

Re. 31,991

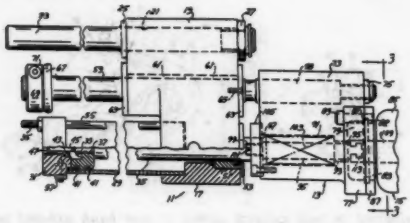
SINGLE GUIDE ROD ACTUATING UNIT

Claude Descoteaux, Roseville, and Chester Wenzel, Royal Oak, both of Mich.

Original No. 4,252,361, dated Feb. 24, 1981, Ser. No. 39,854, May 17, 1979. Application for reissue Feb. 23, 1983, Ser. No. 469,068

Int. Cl.[4] B25J *15/04*; B66C *1/42*

U.S. Cl. 294—88 **18 Claims**



4. Apparatus for gripping a workpiece, comprising:

a body;

a plunger reciprocably mounted on said body and adapted to be coupled with a source of power for reciprocating said plunger;

at least one workpiece gripping member pivotally mounted on said body for movement between an open position and a closed position; and

a cam arrangement for controlling the movement of said gripping member, said cam arrangement including

(1) a slot defined in said one gripping member, said slot including adjacent arcuate portions defining a cam track,

(2) a shoulder between said arcuate portions and extending into said slot, and

(3) a cam member connected with said plunger for reciprocation therewith, said cam member extending into said slot and being engagable with said shoulder to lock said gripping member in said closed position thereof upon loss power from said power source.

Re. 31,992

REINFORCEMENT PROMOTERS FOR FILLED THERMOPLASTIC POLYMERS

Fred H. Ancker, Warren Township, Union County; Arnold C. Ashcraft, Jr., Hightstown, both of N.J.; Martin S. Leung, Manhattan Beach, Calif., and Audrey Y. Ku, Chesterfield, Mo., assignors to Union Carbide Corporation, Danbury, Conn.

Original No. 4,385,136, dated May 24, 1983, Ser. No. 295,811, Aug. 27, 1981. Application for reissue Nov. 29, 1983, Ser. No. 556,170

Int. Cl.[4] C08K *3/22, 3/26, 3/34, 9/04*

U.S. Cl. 523—202 **23 Claims**

1. A polymer composition substantially free of a free radical initiator or its residue comprising a thermoplastic polymer, selected from the groups consisting *of* normally [of] solid hydrocarbon polymers, polyamides and polyvinyl chlorides including the copolymers of the latter with vinyl acetate and an inorganic filler having an average particle size <100 μm wherein the improvement comprises providing about 0.1 to 5 weight % based on the weight of the total composition of a reinforcement promoter having at least two reactive olefinic double bonds, said promoter being characterized by having a promoter index, P, being greater than zero, which is defined by the formula:

$$P=n(n-1)Q(e+2)(1-2R^*_f)-2.5$$

wherein n is the number of olefinic double bonds in the promoter, having [values $\geq$] *a value of at least* 2, Q and e are the Alfrey-Price resonance and polarity parameters, respectively, of at least one of the olefinic double bonds in the compound, wherein Q[$\geq$2]>0 and e[$\geq$2 but $<$4,]>0 and R^*_f having [values $\geq$0 to $\leq$] *a value* <0.5, is the relative flow ratio of the promoter measured by thin layer chromatography on a neutral silica gel using xylene as the eluant and di-n-butyl fumarate as the standard.

PLANT PATENTS

GRANTED SEPTEMBER 24, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,560

***NANDINA DOMESTICA* THUNB. CALLED LOWBOY**

Ralph C. Rushing, Rte. 1, Box 33, Semmes, Ala. 36575

Filed Nov. 18, 1983, Ser. No. 553,532

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—54 **1 Claim**

1. A new and unique variety of heavenly bamboo or Nandina as herein shown and described, characterized by its dense broad-mounded growth habit, stoloniferous nature, bronze to metallic bluish green to reddish purple winter color foliage, creamy white flowers, bright red fruit, adaptability to extreme soil and cultural conditions, the leaves, flowers and fruit being about one-third to one-half the mature size of those for the typical species Nandina; rooted cuttings or divisions will fill a one-gallon container in two seasons, the dense, compact, mounded growth habit will fill numerous landscape needs for missing low-hedging groupings and foundation plantings, requiring less maintenance, especially pruning, than the species; and freedom from disease and insects with wide soil tolerance.

5,561

DISTINCT VARIETY OF STREPTOCARPUS NAMED PURPLE MARTIN

Christian Hopka, 106 E. Lakeview St., Madison, Wis. 53716

Filed Dec. 12, 1983, Ser. No. 560,150

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

5,562

DISTINCT VARIETY OF STREPTOCARPUS NAMED TEAL

Christian Hopka, 106 E. Lakeview St., Madison, Wis. 53716

Filed Dec. 12, 1983, Ser. No. 560,152

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Streptocarpus substantially as herein shown and described.

5,563

IMPATIENS PLANT NAMED VISTA IMPATIENS NO. 37

Claude Hope, Cartago, Costa Rica, assignor to Pan American Plant Company, Parrish, Fla.

Filed Dec. 29, 1983, Ser. No. 566,502

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of impatiens plant named Vista Impatiens No. 37, as described and illustrated, and characterized by its large vivid fuchsia colored flowers with a light center eye, dark green foliage, good self-branching habit, moderate rate of growth, highly floriferous and substantially continuous flower habit, and by its tall upright habit, making the cultivar suitable for bedding plants and pot plant culture.

DISTINCT VARIETY OF ... PLANT

1 Claim

1. A new and distinct variety of ... plant, substantially as herein shown and described.

5,564

DISTINCT VARIETY OF ...

1 Claim

1. A new and distinct variety of ... plant, substantially as herein shown and described.

PATENTS

GRANTED SEP. 24, 1985

ERRATA

For CLASS	See PATENT NO.
623–016	4,542,539
623–006	4,542,540
623–006	4,542,541
623–006	4,542,542
252–312	4,542,745
139–448	4,542,816
227–007	4,542,844
073–852	4,543,126
546–001	4,543,212
514–272	4,543,248
514–012	4,543,252
514–021	4,543,253
514–253	4,543,254
514–258	4,543,255
514–280	4,543,256
514–210	4,543,257
514–772	4,543,258
424–044	4,543,269
525–539	4,543,440

PATENTS

GRANTED SEPTEMBER 24, 1985

GENERAL AND MECHANICAL

4,542,537

NECKTIE CLINCHER

Charles D. Plapp, Riverside, and Anton Choc, Lombard, both of Ill., assignors to Dimple Tie Co., Inc., North Riverside, Ill.

Filed May 20, 1983, Ser. No. 496,480

Int. Cl.⁴ A41D *25/10*

U.S. Cl. 2—148 **6 Claims**

1. A necktie clincher for use with a necktie, such as a four-in-hand type necktie having a longitudinal flared portion and a longitudinal slip portion interconnected by a neck portion and designed to be tied around a wearer's neck in a knot having one or more stages, said clincher being adapted to constrict the flared portion adjacent the knot to develop an elongated dimple, said clincher comprising a funnel-like sleeve, said sleeve having a flared necktie-receiving opening at one end and a narrow necktie-clinching opening at the other end, and a pair of walls defining a slot extending longitudinally along said sleeve and communicating with both of said openings, wherein said flared opening is adapted to initially receive an underside of the flared portion when it is creased along its longitudinal mid-line so that said sleeve may be slipped upwardly along the crease into the formed knot, to be concealed thereby.

4,542,538

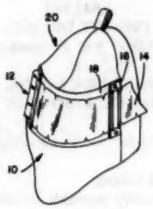
DISPOSABLE PROTECTIVE FILM ACCESSORY FOR THE LENS OF A RESPIRATOR HOOD

Anthony L. Moretti, San Rafael, and Anselmo P. Pellolio, Jr., Cotati, both of Calif., assignors to E. D. Bullard Company, Sausalito, Calif.

Continuation-in-part of Ser. No. 574,015, Jan. 26, 1984, abandoned. This application Dec. 10, 1984, Ser. No. 680,145

Int. Cl.⁴ A61F *9/02*; A42B *1/06*

U.S. Cl. 2—438 **20 Claims**



1. A disposable protective film accessory for use with a face and head protective hood assembly including an optically transparent lens panel of a given length and a given width, said accessory comprising:

(a) an elongated sheet of thin, flexible transparent protective film having a length many times greater than said given length of said lens panel and a width which is at least a substantial portion of said given width of said lens panel, a longitudinal side of said sheet of protective film having a plurality of short slits therein extending transversely of the length of said sheet and spaced from each other by a distance less than said given length of said lens panel, said sheet of protective film being rolled about an axis extending normally to the length thereof;

(b) a housing loosely containing said rolled sheet of protective film, said housing comprising an elongated open sided cavity having a depth greater than the diameter of said rolled sheet of protective film and a length greater than said given width of said sheet of protective film, said housing including a flat rectangular flange surrounding said open sided cavity;

(c) a tensioning bar member having a length greater than said given width of said sheet of protective film;

(d) means for mounting the ends of said tensioning bar to said lens panel with the portion of said tensioning bar member intermediate the ends thereof extending along one end of said lens panel in compressive unobstructed contact with the exterior surface of said lens panel, and

(e) means for mounting the ends of said rectangular flange of said housing in compressive contact with the exterior surface of said lens panel with one side of said rectangular flange extending along the other end of said lens panel and with the other side of said rectangular flange in spaced generally parallel relation to said tensioning bar member and in compressive unobstructed contact with the exterior surface of said lens panel;

whereby the free end of said sheet of protective film may be pulled out of said housing between said other side of said flange and the exterior surface of said lens panel, across said exterior surface of said lens panel and between said tensioning bar member and said exterior surface of said lens panel to hold a length of said sheet of protective film in contact with said exterior surface of said lens panel and whereby said slits promote the tearing of the free end of said sheet of protective film projecting beyond said tensioning bar by a manual twisting of said free end of said sheet of protective film against said tensioning bar member.

4,542,539

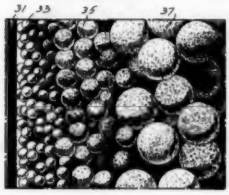
SURGICAL IMPLANT HAVING A GRADED POROUS COATING

Russell H. Rowe, Jr., Warrenton, Va.; Paul J. Lare, Bowie, Md., and Henry Hahn, Fairfax, Va., assignors to Artech Corp., Falls Church, Va.

Continuation-in-part of Ser. No. 357,744, Mar. 12, 1982, abandoned. This application Jan. 31, 1984, Ser. No. 575,624

Int. Cl.⁴ A61F *1/00, 5/04*

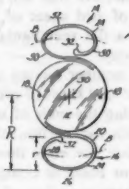
U.S. Cl. 623—16 **17 Claims**



1. A posthetic implant comprising the combination of a metallic substrate and a coating on at least a portion thereof, in which such coating comprises first and second layers of metallic particles disposed with said first layer overlying and fused to said metallic substrate and said second layer overlying and fused to said first layer, wherein the sizes of said particles in said first layer are within the range (−100+400) mesh and

wherein the sizes of said particles in said second layer are within the range (−60+150) mesh.

4,542,540
INTRAOCULAR LENS
Thomas C. White, 1127 Holly Dr., Sioux Falls, S. Dak. 55705
Filed Jun. 8, 1983, Ser. No. 502,312
Int. Cl.⁴ A61F *1/16, 1/24*
U.S. Cl. 623—6 **12 Claims**

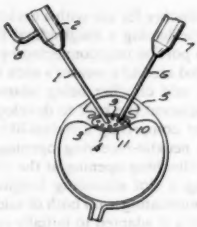


1. An intraocular lens device comprising a
lens for placement adjacent a side of the iris of an eye with the lens axis substantially aligned with the pupillary axis;
fixation elements carried by the lens for supportive engagement with eye structure circumferential of the pupillary axis, at least one fixation element comprising an elongated resilient strut carried at one end by the lens, the strut having a first portion extending outwardly of the lens generally toward said circumferential eye structure, a second portion having a contact surface engageable with the circumferential eye structure, and a third portion extending from the contact surface inwardly toward the lens for a distance, measured radially from the contact surface inwardly toward the lens axis and when the strut is at rest, of at least about two-fifths of the radial distance of the contact surface from the lens axis, said third portion having a free end.

4,542,541
UNIVERSAL INTRAOCULAR LENS
Jaswant S. Pannu, 4850 W. Oakland Park Blvd., Lauderdale Lakes, Fla. 33313
Continuation-in-part of Ser. No. 329,660, Dec. 11, 1981, abandoned. This application Sep. 28, 1982, Ser. No. 425,238
The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.
Int. Cl.⁴ A61F *1/16, 1/24*
U.S. Cl. 623—6 **2 Claims**

1. An intraocular lens comprising:
a lens body;
at least two spaced flexible positioning and supporting elements integrally formed with said lens body as a one-piece construction and extending radially outwardly from the periphery of said lens body;
said elements defining a continuous, curved arc having a diameter greater than the diameter of said lens body, said arc curved toward said lens circumference and terminating in a free end spaced from said periphery; and
snag-resistant means integrally formed on the free end of said elements for smoothly guiding and positioning the lens across eye tissue when implanting the lens, said snag-resistant means extending from said free end, turned towards said elements, and having an outer periphery which terminates adjacent to but spaced from said flexible elements and is substantially greater in size than the width of said flexible elements.

4,542,542
CORRECTION OF DEFECTS IN THE EYE AND COMPOSITIONS THEREFOR
George M. Wright, Mission Viejo, Calif., assignor to Innovative Surgical Products, Inc., Santa Ana, Calif.
Filed Jul. 21, 1983, Ser. No. 515,816
Int. Cl.⁴ A61F *1/16, 1/24*
U.S. Cl. 623—6 **3 Claims**



1. A method of replacing the lens in the eye of a human being or other animal in vivo which comprises:
introducing into the lens capsule, from which the natural lens has been removed, a curable liquid polymer composition comprising crosslinkable polymer and crosslinker through a needle inserted into a hole in the lens capsule;
sealing the hole in the lens capsule by curing the polymer composition that is in the vicinity of the hole to an extent sufficient to prevent loss of said composition from the lens capsule prior to withdrawing the needle from the hole; and
curing said composition to form in situ a clear, synthetic lens.

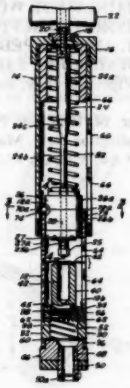
4,542,543
IMPACT DEVICE
Lawrence F. Irwin, 12860 San Fernando Rd., Sylmar, Calif. 91342
Filed Apr. 20, 1984, Ser. No. 602,412
Int. Cl.⁴ E03D *11/00*
U.S. Cl. 4—255 **11 Claims**

1. An impact device for use in clearing stoppages in waste lines, comprising:
(a) a first elongated casing;
(b) a piston reciprocally movable within said first casing;
(c) locking means movable from a first to a second position for preventing movement of said piston within said first casing in a first direction when said locking means are in a first position;
(d) an impact assembly mounted at one end of said first casing, said assembly including;
(i) an anvil adapted to be forcibly impacted by said piston;
(ii) an internal chamber disposed adjacent said anvil, said anvil being movable into said chamber a limited distance upon being impacted by said piston;
(iii) a closures member, including a protruding pipe section defining a passageway leading from said internal chamber to the exterior of the device; and

(iv) a fitting attached to said pipe section for sealable engagement with the inlet of the waste line;

(e) a second elongated casing telescopically receivable over said first casing;

(f) biasing means operably associated with said second casing and said piston for yieldably resisting telescopic movement of said second casing over said first casing when said locking means re in a first position; and



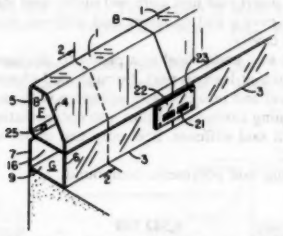
(g) operating means operably associated with said second casing for operating said locking means to cause movement thereof from said first to said second position upon said casing being moved telescopically over said first casing a predetermined distance against the urging of said biasing means whereby upon movement of said locking means to said second position said biasing means will cause said piston to forcibly impact said anvil.

4,542,544

MODULAR WELDED PERIMETER SKIMMING GUTTER FOR SWIMMING POOLS

William H. Baker, 30 Honeysuckle Woods, Clover, S.C. 29710

Filed Nov. 8, 1982, Ser. No. 440,105
Int. Cl.⁴ E02B 7/00; E04H 3/18
U.S. Cl. 4—510 **22 Claims**



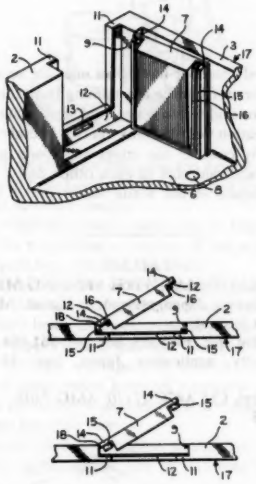
1. A modular bonded perimeter skimming gutter retaining wall for swimming pools, for construction by simple bonding together of a plurality of modular units on-site, disposed about the perimeter of a swimming pool as the retaining wall of the swimming pool, defining a pool-side wall of an open gutter conduit adapted to carry water at a level below a predetermined level of water in the swimming pool, over the top of which wall water may flow from the pool into the gutter, the retaining wall comprising two generally U-shaped channels open along one side and having open interiors defined by side walls extending from a common base, the channels being arranged with the open sides facing one another and bonded together together along the end faces of the side walls to a common divider plate closing off each channel and the interior spaces thereof, thereby forming separated conduits of each channel, one of said conduits being adapted to carry clean water feed to the pool and the other of said conduits being adapted to carry gutter water away from the pool, and a port in at least one of said conduits sufficiently close to a bonded end thereof to afford visual inspection of the integrity of the bond within the conduit at said bonded end.

4,542,545

BATHTUB WITH FOOTWELL AND ENTRANCE DOOR

Richard L. Johnson, 1936 Elm St., White Bear Lake, Minn. 55110, and Carl J. Johnson, 2086 N. 1st St., North St. Paul, Minn. 55109

Filed Mar. 12, 1984, Ser. No. 588,519
Int. Cl.⁴ A47K 3/18
U.S. Cl. 4—555 **4 Claims**



1. A water-tight, open-topped bathtub receptacle having a plurality of vertical side walls, a bottom and a major drain opening, and having in one vertical wall a doorway with a hingedly attached unitary inwardly opening door, a compressible continuous magnetic gasket and a cooperating ferromagnetic surface at cooperating margins of said door and doorway respectively, and an auxiliary drain outlet located in said wall at the bottom of said doorway and so disposed as to be sealed from the inside of said receptacle by said gasket while said door is in the closed position.

4,542,546

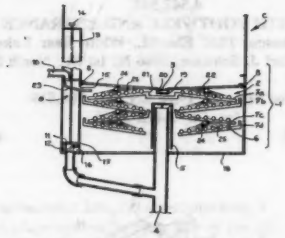
HEAT RECUPERATOR ADAPTED TO A SHOWER-CABIN

Arthur Desgagnes, 2740, DesCôteaux, Sherbrooke, (Quebec), Canada J1K 1N4

Filed Jun. 21, 1984, Ser. No. 622,998
Claims priority, application Canada, Jun. 30, 1983, 431661
Int. Cl.⁴ A47K 3/22
U.S. Cl. 4—598 **13 Claims**

1. In a shower-cabin comprising a bottom surface and a base provided with a drain for evacuating waste water, a heat recuperator incorporated into said base, said heat recuperator comprising a waste water tank provided with a coil mounted on a set of slightly inclined plates that are superimposed in a

cascadelike arrangement, said tank having a top surface, an inlet connected to the cabin drain, an outlet and an overflow positioned at a predetermined level beyond which the water collected in the tank is evacuated, the top surface of said tank forming the bottom surface of said shower-cabin, whereby part of the heat contained in the waste water may be recovered and used to heat or pre-heat an incoming clean water flowing through said coil, the improvement wherein said waste water tank further comprises:



a small lateral chamber having an inlet for receiving waste water different from the one coming from the shower and an outlet for said waste water, said small chamber being in communication with the tank via two lateral openings that respectively connect the upper and lower zones of said chambers and said tank to each other; and

obturation means in the waste water outlet of the samll chamber.

4,542,547

PNUEMATIC MAT WITH SENSING MEANS

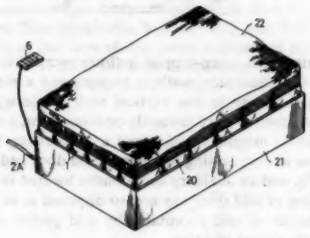
Hisashi Sato, Gunma, Japan, assignor to Hiroshi Muroi, Tokyo, Japan, a part interest

Filed Dec. 14, 1983, Ser. No. 561,464

Claims priority, application Japan, Dec. 15, 1982, 57-189597[U]

Int. Cl.⁴ A47C *27/10*; A61G *7/04*

U.S. Cl. 5—453 **10 Claims**



1. A mat unit comprising

a hollow, fluid-tight bellows;

a fluid feeding pipe connected at one end to said bellows;

a valve disposed in said fluid feeding pipe to control fluid quantity fed into said bellows;

an exhaust pipe connected at one end to said bellows and opened to the atomosphere at the other end thereof;

a second valve disposed in said exhaust pipe to control fluid quantity discharged from said bellows;

a supply source of pressurized fluid connected to the other end of said fluid feeding pipe; and

sensing means for detecting fluid quantity in said bellows, comprising

a member suspended from an upper part of said bellows;

a photoelectric sensor disposed on said suspended member; and

a plurality of reflective members disposed on an outer side of said bellows, said reflective members disposed to lie opposite said photoelectric sensor at predetermined intervals.

4,542,548

METHOD TO FORM SOLES WITH A HEEL AND AN UNDER-HEEL, MAINLY FOR WOMEN FOOTWEAR, WITH AN INCORPORATED SUPPORTING CORE, OR REINFORCEMENT, AND SHAPED AND REINFORCED SOLES OBTAINED BY SAID METHOD

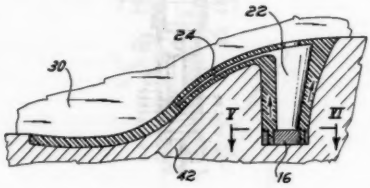
Severino Marazzini, Vigevano, Italy, assignor to PAMA S.p.A., Vigevano, Italy

Filed Mar. 14, 1983, Ser. No. 475,319

Claims priority, application Italy, Mar. 17, 1982, 20228 A/82

Int. Cl.⁴ A43B *13/28, 13/37, 21/36*

U.S. Cl. 12—142 J **2 Claims**



1. A method of manufacturing a sole and heel construction for footwear by the use of a mold having sole and heel forming cavities, comprising the steps of:

inletting a determined quantity of a pre-polymerized fluid polymeric compound into said heel forming cavity;

preforming an assembly of a reinforcing member heel core and an under-heel attached to said heel-core, said under-heel having a peripheral contour substantially complementary to the cross-section of a terminal end of said heel cavity, and being of lateral dimensions greater than the cross-section of said heel core at the end thereof adjacent said under-heel, said under-heel having channels extending between its face proximate said heel core and the opposite face of said under-heel, said channels being located outwardly of the periphery of said heel core;

directionally guiding and positioning said assembly into said mold to insert said heel core and under-heel into said heel forming cavity and to insert said stiffener into said sole forming cavity;

employing said under-heel as a piston to displace said fluid compound, at least in part, through said channels in said under-heel and into filling relationship with said heel and sole forming cavities, and thus into encapsulating relationship with said stiffener, heel core and under-heel assembly; and,

polymerizing said polymeric compound.

4,542,549

SWIMMING POOL CLEANING DEVICE

Hannah R. Keller, 6149 35th Ave. N., St. Petersburg, Fla. 33710

Filed Aug. 15, 1983, Ser. No. 523,448

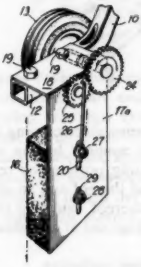
Int. Cl.⁴ E04H *3/20*

U.S. Cl. 15—1.7 **1 Claim**

1. A cleaning device for swimming pool side walls and the like comprising a wheeled handle bar adapted to be propelled and guided by a walking attendant, and a flat scrubbing pad dependingly held on the lower end of the wheeled handle bar and being substantially vertical and extending substantially below a support surface with which the wheel of the wheeled handle bar is rollingly engaged, said handle bar having an upper hand grip and a lower end extension to which the scrub-

bing pad is dependingly secured, the wheeled handle bar having a single wheel disposed near its lower end and near the side of the handle bar away from the depending scrubbing pad, said wheel being canted at a small divergent angle to the lower end portion of the handle bar so that the wheel tends to drive the scrubbing pad toward the side wall surface cleaned by the device when the device is in use, the scrubbing pad extending below said wheel, the scrubbing pad being disposed in a plane substantially at right angle to the axis of rotation of said wheel and said wheel and scrubbing pad being disposed laterally on opposite sides of the handle bar,

a bracket plate carrying the pad and being secured to the lower end extension, the bracket plate being substantially L-shaped and having an upper mounting flange and being secured to the lower end extension,



means on the handle bar and bracket plate and driven by the wheel of the handle bar and being connected with a backing plate of the scrubbing pad to reciprocate the same relative to the bracket plate during movement of the device while cleaning a wall surface,

and said means comprising gearing including a first gear driven directly by said wheel, a second gear on the bracket plate meshing with and driven by the first gear, the bracket plate having substantially vertical guide slot means for the scrubbing pad, and a pitman interconnecting the second gear and the guide slot means,

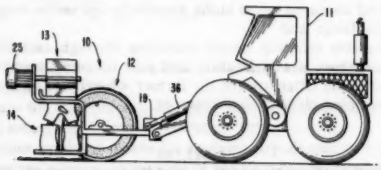
whereby the scrubbing pad is reciprocated substantially vertically relative to the bracket plate during substantially horizontal movement of the cleaning device.

4,542,550

APPARATUS FOR CLEANING BEACHES

John A. Bennett, and Scott L. Taylor, both of West Vancouver, Canada, assignors to Versatech Products Inc., Vancouver, Canada

Filed Dec. 2, 1983, Ser. No. 557,362
Claims priority, application Canada, Feb. 8, 1983, 421110
Int. Cl.[4] F01H *12/00*
U.S. Cl. 15—3 **13 Claims**



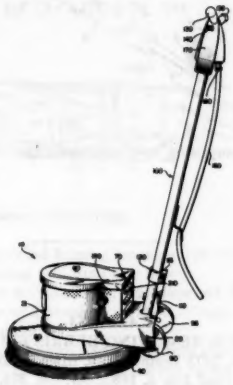
1. A beach cleaner comprising a chassis operable to be connected to a vehicle, a cylinder rotatably mounted on said chassis, an endless removable belt surrounding said cylinder, a protuberance pattern on the outside of said endless belt, debris scraping removal means mounted in close proximity to the outside diameter of said protuberance pattern on said endless belt, conveyor means mounted adjacent said removal means to receive debris from said removal means and a power source means to drive said conveyor means.

4,542,551

ROTARY FLOOR MAINTENANCE DEVICE

Paul E. Phillips, Whitehall, Mich., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 30, 1983, Ser. No. 537,736
Int. Cl.[4] A47L *11/14*
U.S. Cl. 15—49 R **2 Claims**



1. A compact rotary floor maintenance device comprising:

a motor support base having a upper side and lower side and at least one aperture therein;

at least one wheel privotably connected to said motor support base for supporting a portion of the weight of said motor support base relative to a floor;

a high torque electric drive motor disposed on the upper side of said base having a shaft with a free end, and said motor and said shaft being disposed generally perpendicular to said motor support base, and said free end of said shaft extending through said aperture in said motor support base, said electric motor being of a pancake design with the ratio of the height of said motor to the diameter of said motor being less than one;

a motor adapter, directly coupled to the free end of said motor shaft on the lower side of said base for rotation therewith;

a rotary brush means for contacting the surface of said floor, said brush means being directly coupleable to said motor adapter for rotation with said motor adapter and said motor shaft at the same speed as said motor shaft; and

means for controlling the speed of said drive motor between a pre-selected high speed and a pre-selected low speed where said motor spins said brush means at sufficiently high torque without streaking the surface of the floor.

4,542,552

TOOTHBRUSHES

Etienne Y. d'Argembeau, Rue de Belle-Vue, 24, B-1050 Bruxelles, Belgium

Filed Feb. 16, 1984, Ser. No. 580,999
Claims priority, application Belgium, Feb. 21, 1983, 210,156; Jan. 20, 1984, 212,243
Int. Cl.[4] A46B *9/04*
U.S. Cl. 15—167 R **6 Claims**

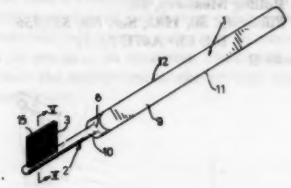
1. A toothbrush, comprising:

(a) a handle (1) having a constant polygonal cross-section;

(b) a head (2) having a circular or elliptical cross-section, the width or diameter of which is smaller than the width of the handle; and

(c) a single elongated tuft of bristles (3) carried by said head,

said bristles having the same length, being substantially tangent to each other, and extending perpendicular to a



plane comprising two opposite edges of the polygonal handle.

4,542,553

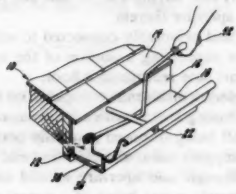
DEVICE FOR REMOVING DEBRIS FROM GUTTERS

Allan P. Cary, 2673 Bretby, Troy, Mich. 48098

Filed Jun. 4, 1982, Ser. No. 384,918

Int. Cl.[4] E04D *13/00*

U.S. Cl. 15—236 R **5 Claims**



1. A gutter cleaning tool comprising:

a rod-like member having a handle at a rear end thereof;

a blade attached to a forward end of said rod-like member, said blade presenting a substantially flat face;

said rod-like member having a substantially straight first section extending rearwardly from said blade substantially perpendicularly to said flat face of said blade;

said blade extending downwardly from said first section a distance which is less than the distance between a lower plate of said gutter and a gutter support member extending transversely across an upper inner portion of said gutter;

said first section of said rod-like member being disposed in its entirety in said gutter beneath said transversely-extending gutter support member when said tool is in use with said blade disposed in said gutter;

said rod-like member having a substantially straight second section extending upwardly from said first section;

said rod-like member further having a substantially straight third section extending rearwardly from said second section with respect to said first section and being positioned a distance above said first section such that said third section is disposed just above said gutter when said tool is in use with said blade disposed in said gutter;

said handle being provided at a rear end of said third section;

said second section being substantially shorter in length than either said first section or said third section;

said second section being of a length approximately equal to one-half the length of said first section; and

said third section extendng at an acute angle with respect to a vertical plane containing said first section.

4,542,554

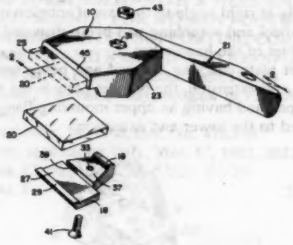
LOW COST, RENEWABLE SCRAPING IMPLEMENT

Martin A. Wallerstein, P.O. Box 6077, Ft. Myers Beach, Fla. 33931

Filed May 15, 1984, Ser. No. 610,589

Int. Cl.[4] A47L *13/08*

U.S. Cl. 15—236 R **7 Claims**



1. A hand held renewable scraping implement comprising:

a unitary, handle member having a pair of opposed sides forming a housing portion for receiving a scraping element at one end thereof and an elongated grip portion at the other end thereof, said grip portion and said housing portion being disposed at an obtuse angle relative to each other,

said housing portion including

a front edge,

a first recessed area therein extending rearwardly from said front edge, and a cover surface along opposed side edges thereof extending downwardly relative to said front edge on opposed sides of said recessed area,

said first recessed area including a first abutment wall opposing said one edge and extending essentially parallel to the latter,

a retaining member having a portion adapted to be received within a complementary shaped recessed area in said housing portion and said retaining member having

a second recessed area in overlying opposed relationship to said first recessed area in said housing, and

said second recessed area including a second abutment wall opposing said one edge and extending essentially parallel to the latter,

said housing portion of said handle member and said retaining member including aligned openings therein,

a polygonal scraping element having a plurality of scraping edges, said scraping element being received within said overlying first and second recessed areas between said housing portion and said retaining member with one of said scraping edges thereof being disposed beyond said one edge of said housing portion between said downwardly extending cover surfaces and another of said scraping edges being in abutment with said first and second abutment walls along essentially the entire length of the latter; and

releasable securing means extending through said aligned openings in said housing and said retaining member to urge the latter toward the former whereby to clamp said scraping element therebetween.

4,542,555

DEVICE FOR CLEANING A COLLECTING ROPE FROM OIL OR SIMILAR MATERIAL

Lars Lundin, Porvoo, Finland, assignor to Oy Lars Ludin Patent Ab, Helsinki, Finland

Filed Apr. 6, 1984, Ser. No. 597,758

Claims priority, application Finland, Apr. 7, 1983, 831179

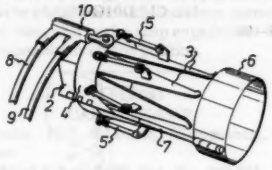
Int. Cl.[4] E02B *15/04*

U.S. Cl. 15—256.6 **12 Claims**

1. A cleaning device for cleaning a collecting rope to be

transported through the device, of oil and similar material, the collecting rope including a core and collecting bristles attached thereto, and said cleaning device comprising

a frame part enclosing said rope, the shape of the frame part corresponding to the at least partly circular outer cross section of the rope as constituted by the outer ends of the bristles, and



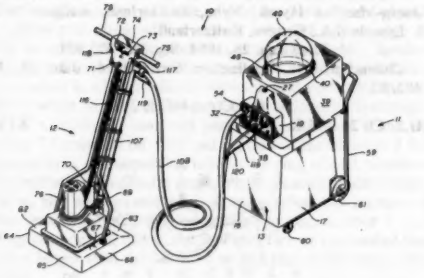
elongated spaced tongues having base parts arranged along the periphery of said frame part and being distributed therealong, and having free tips extending gently inwardly slanted against the direction of the rope transportation and through said bristles and against the core part of the rope to be cleaned, the spaces between said tongues narrowing as seen from the tips of the tongues and essentially closing at the base parts thereof.

4,542,556

CARPET VACUUM, CLEANING, AND DYEING APPARATUS

Jeffry S. Hepple, Waco, Tex., assignor to Hightec Manufacturing Corporation, Waco, Tex.

Filed Feb. 6, 1984, Ser. No. 577,070
Int. Cl.⁴ A47L *11/34*
U.S. Cl. 15—321 **29 Claims**



1. An apparatus for vacuuming, cleaning, and dyeing carpet comprising

means for mechanically agitating the fibers of a carpet with a rotary and lifting movement,

vacuum-applying means for applying dry air suction to said carpet adjacent to the zone of agitation by said mechanical agitating means,

means for supplying detergent for cleaning and water for rinsing to a carpet at high pressure and low volume,

means for supplying a carpet dye or pigment in water evenly to a carpet at low pressure and high volume, and

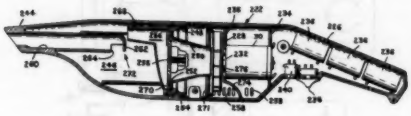
means including said vacuum applying means for applying wet suction to a carpet wet with a carpet treating material, selectively at preselected times.

4,542,557

WET-DRY VACUUM CLEANER

Morris M. Levine, Scarsdale, N.Y., assignor to CIC Int'l. Corp., New York, N.Y.

Continuation-in-part of Ser. No. 587,227, Mar. 7, 1984. This application Jul. 5, 1984, Ser. No. 627,899
The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.
Int. Cl.⁴ A47L *5/24, 7/00*
U.S. Cl. 15—344 **7 Claims**



1. A vacuum cleaner comprising:

a motor;

a generally cylindrical housing having a front end and a back end, said housing enclosing said motor;

a blower driven by said motor and disposed ahead of said motor within said housing, rotation of said blower producing a vacuum;

a canister removably attached to the front end of said housing, said canister having an intake nozzle for reception of dirt, liquid, and air drawn into said nozzle in response to a vacuum developed by said blower;

said canister including a storage chamber disposed alongside an exit port of said nozzle for the storage of the dirt and the liquid drawn in via said nozzle; and

deflection means disposed between said blower and said nozzle for deflecting liquid and dirt drawn in via said nozzle away from a stream of air which flows from said nozzle to said blower, said deflection means comprising:

an air conduit disposed ahead of said blower and guiding the air stream from said canister to said blower, said conduit incorporating an inlet chamber facing said storage chamber and having an entry port for receiving air from said canister, said entry port being offset from the location of said storage chamber so as to be above said storage chamber and inhibit the passage of any of the liquid from said storage chamber into said conduit when said vacuum cleaner is oriented with a horizontal orientation placing said storage chamber beneath said nozzle; and

a diverter positioned at said exit port of said nozzle and directing suctioned liquid away from said entry port of said conduit, said entry port of said conduit being provided with a front wall and a snout extending forward of said front wall into said storage chamber, said snout preventing the entry of the liquid into said inlet chamber when said cleaner is oriented with said horizontal orientation.

4,542,558

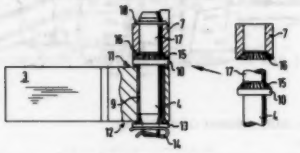
UNHINGEABLE DOOR HINGE JOINT HAVING A HINGE PIN WITH A NONROTATABLE PORTION AND A RELATIVELY ROTATABLE PORTION

Ernst Brockhaus, Remscheid-Hasten, Fed. Rep. of Germany, assignor to Fa. ED. Schwarïichter GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,373
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1981, 3137112; Feb. 10, 1982, 3204606
Int. Cl.⁴ E05D *7/10*
U.S. Cl. 16—263 **15 Claims**

1. A door hinge assembly particularly for motor vehicle doors comprising a first hinge member having a first hinge eye, a second hinge member having a second hinge eye, a hinge pin consisting essentially of a single continuous longitudinal mem-

ber defining an axis engaged within said eyes of said first and second hinge members, respectively, along different portions of its length, said hinge pin being mounted to be freely rotatable relative to said first eye and secured against axial movement relative thereto with said second hinge eye being adapted to allow axial movement thereof relative to said hinge pin in order to enable mounting and dismounting of said second hinge member on and from said hinge pin, and engagement means interposed between said hinge pin and said second eye to maintain said hinge pin and said second eye in nonrotative



relative engagement with each other when said second hinge member is mounted on said hinge pin without impeding axial movement of said second hinge eye relative to said hinge pin when said second hinge member is dismounted therefrom, said engagement means comprising a shaped portion of said hinge pin and a complementary shaped portion of said second eye, with at least the shaped portion of said hinge pin having alignment faces engaging said complementary shaped portions of said second eye to effect said nonrotative relative engagement between said hinge pin and said second hinge eye, said alignment faces being directed radially relative to said hinge axis.

4,542,559

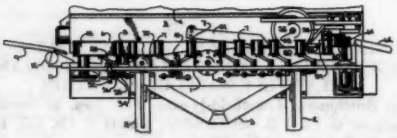
METHOD FOR FILLETING FISH

Ben C. Brower, Gladstone, Mich., assignor to A. W. Manufacturing Inc., Gladstone, Mich.

Division of Ser. No. 282,023, Jul. 10, 1981, Pat. No. 4,484,375. This application Sep. 14, 1984, Ser. No. 651,217

Int. Cl.⁴ A22C *25/16*

U.S. Cl. 17—46 **6 Claims**



1. A method of filleting fish comprising the steps of making a pair of belly cuts extending longitudinally of the fish body on either side of the anal fin, positioning the fish at an oblique angle of presentation, cleaning the viscera from the belly of the fish, making a pair of backbone cuts through the ribs on either side of the fish backbone to form a pair of individual fish portions, and making a rib cut through the side of each fish portion above the ribs to provide a pair of shank fillets.

4,542,560

PRE-OPENING DEVICE FOR A CARDING MACHINE

Takuzo Tooka, Toyoake; Choji Nozaki, Nagoya; Junzo Hasegawa, Oobu; Susumu Kawabata, Aichi; Hiroshi Niimi, Nagoya; Yoshiaki Yamaoka, Kariya; Hiroaki Goto, Oobu, and Yasuhiro Miura, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Apr. 11, 1984, Ser. No. 599,256

Claims priority, application Japan, Apr. 21, 1983, 58-70683

Int. Cl.⁴ D01G *19/32*

U.S. Cl. 19—98 **9 Claims**

1. Pre-opening device for a carding machine, wherein the fibers opened by and delivered from a taker-in roll are gripped and conveyed by the wire wound around the peripheral wall of a rotating cylinder so as to be opened through cooperation between the cylinder and a rotating flat, said pre-opening device including a plurality of fixed flats, each having a wire on the inner wall thereof, placed in tandem in opposition to and along the peripheral wall of the cylinder intermediate the taker-in roll and the rotating flat, characterized in that an opening 5 to 33 mm long circumferentially is provided between respectively adjacent ones of the fixed flats.

4,542,561

WRISTLET CLASP WITH UNFOLDING BUCKLE

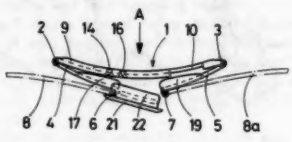
Joerg-Manfred Hysek, Nyon, Switzerland, assignor to Jean Lassale S.A., Geneva, Switzerland

Filed Jan. 26, 1984, Ser. No. 573,951

Claims priority, application Switzerland, Jan. 28, 1983, 483/83

Int. Cl.⁴ A44C *5/24*

U.S. Cl. 24—71 R **4 Claims**



1. A wristlet clasp for connecting the ends of a wristlet, said clasp comprising an elongate curved central portion comprising two plates adjustable lengthwise relative to one another to vary the length of said central portion between maximum and minimum lengths, means for securing said two plates to one another in selected lengthwise position relative to one another, two curved arms hingedly connected to opposite ends respectively of said central portion, said arms having a combined length less than the minimum length of said central portion and being swingable between an open position in which they extend beyond the ends of said central portion and a closed position in which they overlie the outer convex side of said central position, said arms have side webs engageable with side

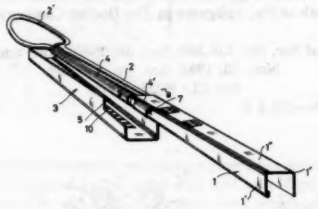
edges of said central portion with a snap engagement to retain said arms releasably in closed position, pivot means hingedly connecting ends of said wristlet with free ends of said arms respectively, and a cover plate hingedly connected with the free end of one of said arms for movement betwen an open position and a closed position in which it overlies and thereby covers a gap between the free ends of said arms when in closed position, said cover plate having a length sufficient to cover said gap when said central portion is of maximum length, and having side webs engageable with the hinge connection at the free end of the other arm with a snap engagement to retain said cover plate releasably in closed position.

4,542,562

CABLE CLAMP

Masahiko Okura, 11-7, 4-Chome, Shiroganedai, Minato-ku, Tokyo, Japan

Filed Feb. 6, 1985, Ser. No. 698,675
Int. Cl.[4] F16G *11/04*
U.S. Cl. 24—136 R **2 Claims**



1. A cable clamp comprising a wedge-like member **1** of upper opened channel bar type formed with a stopper piece **8** at the inside of the fore end portion thereof, which side plates are respectively made into a wedge-like plate becoming narrower towards the fore end thereof; a suspending ring member **2** attached fixedly on the bottom plate of said member **1** at its base portion to project forwardly from the fore end of the member **1**; a sleeve like member **3** of upper opened channel bar type, which side plates are respectively made into a wedge-like plate after the fashion of those of said member **1**, one of said side plates providing with a deeply inturned upper edge **4**, while the other providing with an internally slightly bended upper edge **5** so that the member **1** may be held in the member **3** from below in a longitudinally movable and vertically spaced relation when in use; means permitting a loosely-fit-engagement of a sectioned rear end part **4'** of said edge **4** and an opening **7** formed in the fore end portion of the member **1** for accomplishing an inseparable relative turning of said members **1, 3** round said engagement point; a means causing said stopper piece to run against said edge **4'** even when the member **3** moves forward in any fashion relative to the member **1**; and making the conture size of the rear end face of the wedge-like member larger than that of the fore end face of the sleeve-like member.

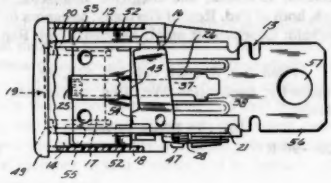
4,542,563

END RELEASE BUCKLE

Horst U. Befort, Midland, Canada, assignor to TRW Automotive Products, Inc., Ohio

Filed Jun. 30, 1983, Ser. No. 509,143
Claims priority, application Canada, Feb. 18, 1983, 421932
Int. Cl.[4] A44B *11/25*
U.S. Cl. 24—641 **37 Claims**

1. An end release type buckle for safety belts comprising:
a channel shaped chassis having a web portion and flanges;
a latch pivotal in said chassis and biased toward a closure position;
a blocking bar pivotal transversely of said channel and biased toward blocking said latch in the closure position;
a tubular case detentably receiving said chassis, said latch and said blocking bar from one end;
a release slider reciprocal longitudinally of said chassis and biased against one end of said case and having an interference relation in movement first with said blocking bar and then with said latch whereby said latch is driven to the



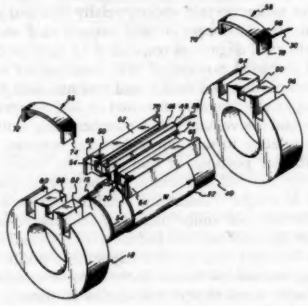
open position and said blocking bar is moved from blocking relation to said latch; and
a closure plate biased toward said one end of said case and movable by insertion of a buckle tongue into said case, said closure plate preventing said blocking bar from blocking opening movement of said latch until said closure plate is displaced from its biased position.

4,542,564

METHOD OF MAKING ELECTRICAL CONNECTIONS TO THIN FILM COATINGS

Bruce E. Mount, Diamond Bar, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 316,176, Oct. 29, 1981, Pat. No. 4,425,526.
This application Sep. 19, 1983, Ser. No. 533,488
Int. Cl.[4] H01L *41/22*
U.S. Cl. 29—25.35 **4 Claims**



1. A method of forming electrical connections to a piezo film, said film having a conductively coated outer surface and a conductively coated inner surface, said method comprising the steps of:
positioning the film of a selected width and length so that the coating on the inner surface of end areas of the film face each other,
placing a relatively rigid conductor bar between said end areas, said bar having a length substantially equal to the width of said film,
providing a pair of elastomeric conductive pads having lengths substantially equal to the width of said film,
pressing said pads against said end areas on the side opposite the film from the conductive bar at a selected pressure to make electrical contact between said outer conductive surface and said pads across the width of said film, and to force said inner conductive surface of said film into electrical contact with said rigid conductor bar across the width of said film, and

connecting the conductive bar and the conductive pads to electrical conductors so that electrical signals may be applied to the coated film.

4,542,565

ROLLING TOOL

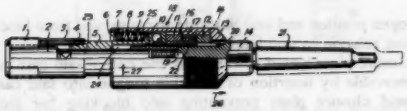
Garri Berstein, Erkelenz, and Siegfried Bagusche, Erkelenz-Lövenich, both of Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Filed Jun. 8, 1984, Ser. No. 618,748

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1983, 3324494

Int. Cl.⁴ B24B *39/00*

U.S. Cl. 29—90 R **7 Claims**



1. A rolling tool for planishing cylindrical surfaces, of the type which comprises a support cone assembly, a cage axially displaceable and rotatably mounted on said cone assembly and a series of rollers disposed within said cage and bearing against said cone, said tool including apparatus for varying the axial position of said cone assembly relative to said cage, said apparatus comprising a mandrel having a threaded porton, a stop nut rotatably mounted on said threaded portion of said mandrel, a latch socket abutting said nut and axially moveably mounted on said mandrel between said nut and said cone assembly, an axially directed slot formed in said mandrel, key means spanning the space between said socket and said slot for non-rotatably coupling said socket and said mandrel, axially directed slot means on said socket, axially directed slot means on said nut, the slot means of said nut and said socket being shiftable into axial alignment responsive to rotation of said nut about said threaded portion of said mandrel, an adjustment sleeve encompassing said socket and said nut, said adjustment sleeve being axially movably mounted on said mandrel, a spline member on said sleeve, said spline member being shiftable with said sleeve relative to said nut and socket between an active position whereat portions of said spline lie within said slot means of said nut and said socket to thereby couple said nut and socket in torque transmitting relation and an adjustment position whereat said spline means of said sleeve is engaged with the slot means of said nut and cleared from said slot means of said socket, said nut, in said adjustment position of said sleeve being rotatable with said sleeve relative to said threaded portion of said mandrel and said socket to thereby shift the axial position of said nut along said mandrel.

4,542,566

CORRUGATING ROLLER

Robert J. Sukenik, Bloomfield Hills, Mich., assignor to Corrugating Roll Corporation, West Bloomfield, Mich.

Filed Nov. 15, 1982, Ser. No. 441,921

Int. Cl.⁴ B30B *11/18*

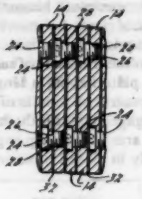
U.S. Cl. 29—125 **43 Claims**

1. A forming roller for a corrugating machine, comprising:

a rotatable mandrel;

a plurality of discrete forming discs coaxially mounted on said mandrel for rotation therewith, said forming discs cooperating to define a forming surface on said mandrel; and

means for compressingly and rigidly securing each of said forming discs to one another on said mandrel, said securing means including a number of fasteners extending axially through less than all of said forming discs on said mandrel and directly attaching each of said forming discs to an adjacent forming disc so that each of said forming discs is positively fixed for rotation with an adjacent forming disc and said forming discs cooperatively define a rigid structure which defines said forming surface.



4,542,567

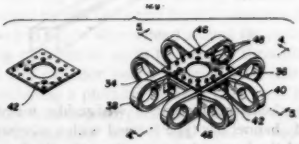
METHOD OF FABRICATING A HELICOPTER ROTOR HUB

Francis H. McArdle, Norristown, and Earl Schneider, Havertown, both of Pa., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 429,365, Sep. 30, 1982,. This application Nov. 30, 1983, Ser. No. 556,658

Int. Cl.⁴ B23P *15/04*

U.S. Cl. 29—156.8 R **5 Claims**



1. A method of fabricating a rotor hub for a rotor system of a helicopter from curable composite material, comprising the steps of:

constructing a plurality of core structures each from curable composite material;

subjecting the constructed core structures to a curing cycle to at least partially structuralize the core structures;

arranging the core structures thus cured into an assembly;

forming a closed loop strap on each core structure from curable composite material; and

subjecting the assembly including the closed loop straps to a curing cycle, as a result of which, the assembly with the straps as a part thereof is structuralized.

4,542,568

APPARATUS FOR FORMING SPINE FIN HEAT EXCHANGER TUBES

Herbert J. Venables, III, and Herbert J. Venables, IV, both of Chagrin Valley, Ohio, assignors to Venables Enterprises, Cleveland, Ohio

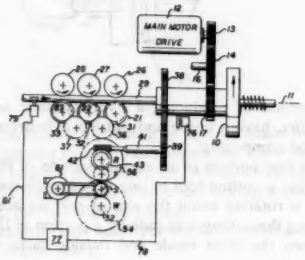
Continuation-in-part of Ser. No. 251,951, Apr. 7, 1981, Pat. No. 4,381,592, which is a division of Ser. No. 16,799, Mar. 2, 1979, abandoned. This application May 31, 1983, Ser. No. 499,283

Int. Cl.⁴ B23P *15/26*

U.S. Cl. 29—157.3 AH **5 Claims**

1. An apparatus for producing spine fin heat exchanger tubes in which the tube is helically wound with a strip of thin metal material providing an uninterrupted base wound directly on the tube and providing a multiplicity of individual spines integrally joined at one end to said base and extending substantially radially therefrom comprising a cutter head operable to cut a strip of material along at least one edge to produce a strip of spine fin material providing said base and said spines, a tube feed operable to feed a tube axially relative to said head, and drive means connected to said cutter head and said tube feed

operable to produce timed relative rotation and relative axial movement between a tube being fed by said tube feed and said cutter head, said cutter head being operable to helically wrap said spine fin material around said tube with said base engaging said tube and said spine extending substantially radially with respect to said tube, said drive means including minimum ratio means insuring that said tube and cutter head move relative to each other through a minimum predetermined distance during each relative rotation therebetween to thereby wind said strip with a minimum helix angle, said drive means also being operable at selected intervals to increase the distance said tube and cutter head move relative to each other during each relative rotation to increase the helix angle of winding above said minimum helix angle at selected locations along the length of



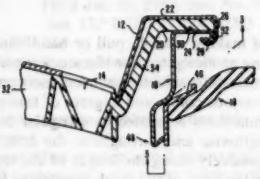
said tube, said drive means including a gear train mechanically interconnecting said cutter head and said tube feed to positively insure that said tube and cutter head move relative to each other at least through said predetermined minimum distance during each relative rotation, said drive means including a first motor drive mechanically interconnected to said cutter head and said tube feed operable to produce feeding at said predetermined minimum distance and a separate variable speed motor drive connected to said tube feed operable to control the feeding of said tube relative to said cutter head at said selected intervals, automatic clutch means being provided in the connection between said first motor drive and said tube feed which automatically release said tube feed from said first motor drive at said selected intervals.

4,542,569

METHOD OF PREVENTING WHEEL COVER INSERT ROTATION

Lawrence C. Ladouceur, Windsor, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1983, Ser. No. 469,885
Int. Cl.⁴ B21D *53/32*
U.S. Cl. 29—159 A **8 Claims**



1. Method of assembling a wheel cover of the type including an outer ornamental member, a reinforcing insert and a retainer, comprising the steps of:

forming said insert with a first annular radially extending flange at the periphery of said insert;

forming said outer ornamental member with an axially inwardly extending cylindrical flange at the periphery joined to a second annular radially extending flange that complements said first annular radially extending flange of said insert;

forming said retainer with a third annular radially extending flange that generally complements said first annular radially extending flange;

forming a plurality of axially outwardly extending jagged edged barbs on the outboard side of said third annular radially extending flange;

placing said insert between said retainer and said outer ornamental member so that said barbs of said retainer contact the inboard surface of said first annular radially extending flange and said second annular radially extending flange contacts the outboard surface of said first flange;

bending said cylindrical flange of said outer ornamental member radially inwardly to fixedly join said outer ornamental member to said retainer and to capture said insert therebetween; and

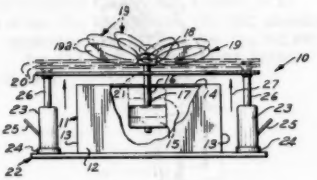
applying pressure to the inboard surface of said third annular radially extending flange in the vicinity of said barbs so that said barbs will penetrate said insert and prevent rotation of said insert relative to said retainer.

4,542,570

PORTABLE FAN BLADE AND SHEAVE REMOVING DEVICE

Vernon Prince, 120 Utah, Yukon, Okla. 73009

Filed Sep. 13, 1983, Ser. No. 531,640
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—252 **1 Claim**



1. A portable fan blade and sheave removing device comprising, in combination, a rectangular housing having a front wall, a pair of opposite side walls and a top wall, an enlarged rectangular base plate affixed under a central portion of said housing, a rear side of said housing being open to freely receive a fan motor into said housing; and a cut-out notch in a rear of said top wall so as to receive an upwardly extending shaft of said fan motor; a hydraulic jack mounted upon opposite ends of said base plate; said jack including an operating handle and a slidable piston in a cylinder, upper ends of said piston being affixed to an underside of opposite ends of a pressure plate positioned between said housing top wall and a hub of a fan blade mounted on said shaft, and a cut-out notch in a rear of said pressure plate for receiving said shaft therethrough, said hydraulic jack operating handle forcibly urging said pressure plate against said fan blade hub for removal of said fan blade from said shaft.

4,542,571

REAR AXLE BEARING PULLER

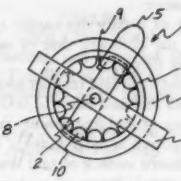
Woodard R. Sullivan, 1900 Curtis, Florissant, Mo. 63031

Filed Mar. 16, 1984, Ser. No. 590,368
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—256 **1 Claim**

1. A bearing puller comprising

an insertion element provided with a threaded aperture therein,

handle means pivotally mounted on said insertion element,



a pressure bar, provided with an aperture therein, and

bolt means operably disposed in the aperture in said pressure bar and the threaded aperture in said insertion element.

4,542,572

DEVICE FOR THE ACCURATE POSITIONING OF THE LWL FIBER ENDS OF LWL COMPONENTS

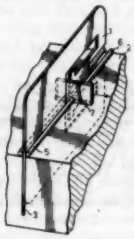
Werner Hopp, and Bertold Marlorny, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 29, 1983, Ser. No. 556,134

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244689

Int. Cl.⁴ B23Q *3/02*

U.S. Cl. 29—281.5 **2 Claims**



1. A device for the accurate positioning and securing of the LWL fiber ends of LWL components on a support part, particularly of LWL switches and plug connectors, comprising:

(a) a plane support surface with a guide slot extending at right angles thereto for receiving the support part on which the LWL fiber ends are to be secured;

(b) a sliding part a having contact surface for exerting pressure to the LWL fiber ends to push them against the support part, the guide slot located such that the LWL fiber ends are positioned against the plane support surface parallel to the longitudinal direction of the guide slot and against a boundary surface of the support part adjoining at right angles thereto with plane parallel pressure, functionally ready for operation;

(c) a spacer having a stop surface for positioning the LWL fiber ends in the region of the fiber end faces in plane parallel relationship to each other;

(d) the sliding part, in the region of the contact surface, having a chamfer which makes an angle of approximately 45° relative to the plane support surface;

(e) a recess in the central region of the side of the sliding part, facing the support part, for applying adhesive to the LWL fiber ends and to the boundary surface of the support part; and

(f) means biasing said sliding part against said LWL fiber ends with a biasing force acting essentially perpendicular to said contact surface.

4,542,573

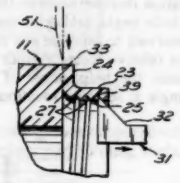
METHOD OF PRODUCING A HYDRODYNAMIC SEAL

Dean R. Bainard, Lake Wylie, S.C., assignor to The Fluorocarbon Company, Laguna Niguel, Calif.

Filed Sep. 28, 1984, Ser. No. 656,082

Int. Cl.⁴ B23P *17/00;* **E21B** *33/00;* **B61F** *15/22*

U.S. Cl. 29—417 **13 Claims**



1. A method of producing a hydrodynamic seal from a tubular billet, having inside and outside cylindrical surfaces, said method comprising:

slicing a first portion of an annular section of the billet by applying a cutting tool to one of said surfaces while the billet is rotating about the axis of said surfaces, and advancing the cutting tool radially a portion of the distance between the billet inside and outside surfaces along a cutting line;

deforming the sliced portion by extending it the axially away from the cutting line, said deformed portion having an outer surface and an inner surface;

cutting a groove in the inner surface of the deformed portion; and

completing the slicing of said section from the billet.

4,542,574

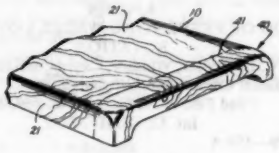
METHOD OF MAKING KNOBS AND HANDLES

Gerald Ritz, 250 Clarke Ave. Apt. PH7, Westmount, Montreal, Quebec, Canada

Filed Oct. 11, 1983, Ser. No. 540,341

Int. Cl.⁴ B23P *17/00*

U.S. Cl. 29—417 **1 Claim**



1. The method of making a knob, pull or handle including the steps of providing an elongated bar-like stock member cast from a synthetic resin into which has been incorporated a random pattern of various colors and degrees of transparency forming various laminations separated by irregular boundary lines extending lengthwise and throughout the body of the stock member, successively along the length of the stock machining radially into the sides of the stock member to form the shape of knobs, pulls or handles and in so doing cutting transversely across the random pattern along the surfaces so formed by the cutting to accentuate the laminar appearance and random nature thereof and thereby individualize the appearance of each of the knobs, pulls or handles, progressively severing each knob, pull or handle from the stock and in so doing cutting in a different direction across the random pattern and polishing the surfaces of the severed knobs, pulls or handles to the desired surface texture.

4,542,575

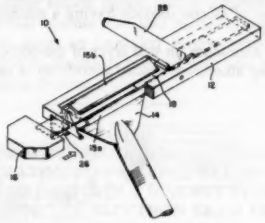
METHOD AND APPARATUS FOR INVERTING AN INJECTOR RAZOR BLADE

Dennis Revoyr, Rte. 3, Box 26, Mead, Wash. 98021

Filed Oct. 20, 1983, Ser. No. 543,946

Int. Cl.[4] B65D *81/24;* **B23P** *19/00;* **B25B** *27/14*

U.S. Cl. 29—426.2 **4 Claims**



1. An apparatus for removing an injector blade held within a razor by clasping members and reinserting it into the razor in an inverted position for further use, which comprises:

a cartridge for receiving a blade and storing it prior to reinsertion, the cartridge including:

an elongated razor head aperture for receiving the head of an injector razor;

a blade slot extending from one end of the razor head aperture to the exterior of the cartridge, the blade slot sized to receive and contain an injector blade;

an end slot extending from the end of the razor head aperture opposite the blade slot to the exterior of the cartridge, the end slot and blade slot being aligned with one another;

first means for separating the clasping members and guiding the razor head into the razor head aperture so that a blade within the razor head will be aligned with the slots; and

second means for separating the clasping members and guiding the razor head into the razor head aperture in a second blade-receiving position so that the razor head will be properly aligned to receive a blade from the blade slot; and

a push key for sliding the blade out of the razor and into the blade slot and out of the blade slot and into the razor.

4,542,576

REPLACEABLE HEAD MULTI-SPINDLE FASTENING APPARATUS

Junichi Yamanaga, Fujimi, and Shiro Naito, Hidaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1983, Ser. No. 517,266

Int. Cl.[4] B21D *39/00;* **B23Q** *3/157*

U.S. Cl. 29—568 **1 Claim**

1. A fastening apparatus comprising:

a supporting column, having an upper portion and a lower portion,

a working station installed on one side of the lower portion column,

upper and lower annular rail means supported on and coaxially surrounding the upper portion of the column,

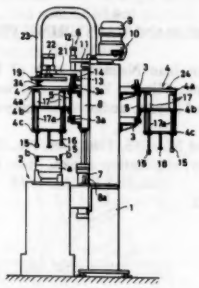
plural multi-spindle fastening heads supported on the lower annular rail means and movable circularly thereon around said column on respective frame bases,

index means mounted on the upper portion of the column for selectively engaging and moving a desired one of the fastening heads to a position above the working station,

a connecting head means supported by the upper portion of the column engageable with the fastening head positioned over the working station for supplying power thereto from a separate power source, and

a replacing carrier;

the upper and lower annular rail means comprising first movable rail means positioned adjacent the working station for raising and lowering the desired one of the fastening heads to an operating position at the working station for performing fastening on a workpiece, and



second movable rail means at a position away from the working station for raising and lowering another desired one of the fastening heads to a position for being attached to or detached from the apparatus, the lowered head being received on the replacing carrier.

4,542,577

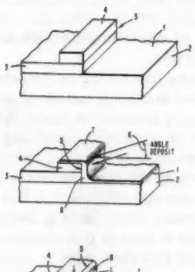
SUBMICRON CONDUCTOR MANUFACTURING

Thomas N. Jackson, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 454,915, Dec. 30, 1982, abandoned. This application Feb. 23, 1984, Ser. No. 582,695

Int. Cl.[4] H01L *21/28, 21/283, 21/302*

U.S. Cl. 29—571 **6 Claims**



1. A process for manufacturing a selectable electrical resistance electrical conductor precisely positioned in electrical conduction influencing proximity to a substrate surface comprising in combination the steps of:

applying a dielectric layer having a first thickness in contact with a substrate surface,

applying a conductive layer having a second thickness over said dielectric layer,

providing a common surface at a precise location on said substrate surface essentially perpendicular to said substrate surface of both said layers,

depositing at an angle between said substrate surface direction and said essentially perpendicular common surface a conductive deposit whereby said conductive deposit ex-

hibits a third thickness on said common surface and a fourth thickness on said substrate surface and on said conductive layer surface, and

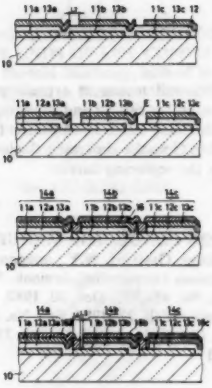
removing said conductive deposit at least to the extent of the deposit on said substrate surface.

4,542,578

METHOD OF MANUFACTURING PHOTOVOLTAIC DEVICE

Masaru Yamano; Isao Nagaoka, both of Hirakata; Yukinori Kuwano, Katano; Hiroshi Kawada, and Souichi Sakai, both of Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Mar. 15, 1984, Ser. No. 589,886
Claims priority, application Japan, Mar. 18, 1983, 58-46387
Int. Cl.⁴ H01L *31/18*
U.S. Cl. 29—572 **10 Claims**



1. A method of manufacturing a photovoltaic device comprising the steps of:

preparing a substrate having an insulating surface;

forming on said insulating surface of said substrate a plurality of mutually spaced first electrodes corresponding to a plurality of photoelectric converting regions;

forming a semiconductor film and a second electrode continuously covering the entire surface of said plurality of first electrodes one upon the other in this order;

removing portions of said second electrode by means of an energy beam at least in the vicinities of the gap between adjacent said first electrodes so as to divide said second electrodes into a plurality of portions corresponding to said plurality of photoelectric converting regions;

removing said semiconductor film by dry etching, using said second electrodes as masks, thereby exposing a portion of each of said first electrodes; and

electrically connecting said exposed portion of each said first electrode with a portion of the adjacent second electrode.

4,542,579

METHOD FOR FORMING ALUMINUM OXIDE DIELECTRIC ISOLATION IN INTEGRATED CIRCUITS

Michael R. Poponiak, Newburgh, and Robert O. Schwenker, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1975, Ser. No. 592,150
Int. Cl.⁴ H01L *21/20, 21/76*
U.S. Cl. 29—576 W **10 Claims**

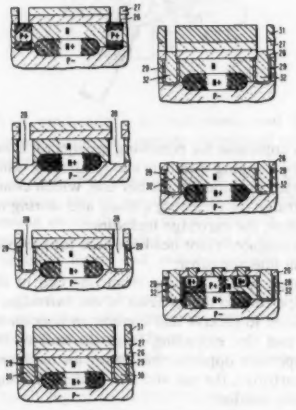
1. In the fabrication of integrated circuits, a method for forming dielectrically isolated regions in a semiconductor substrate comprising the steps of:

forming over said semiconductor substrate surface, an electrically insulating layer of dielectric material having a plurality of openings therethrough,

etching to form recesses in the semiconductor substrate exposed in said openings,

forming a thin layer of silicon dioxide in said recesses, said thin layer of silicon dioxide having a maximum thickness of 200 Å,

depositing aluminum on said layer of dielectric material and depositing aluminum spaced therefrom in said recesses,



fully anodizing the aluminum in said recesses in an aqueous electrolytic solution, by applying a positive bias voltage to said semiconductor substrate to thereby subject the aluminum in said recesses to said bias voltage and anodize the aluminum in said recesses to aluminum oxide, the thickness of said thin layer of silicon dioxide being insufficient to insulate the aluminum in said recesses from said positive bias voltage, the thickness of said electrically insulating layer of dielectric material being sufficient to electrically insulate the aluminum thereon from said positive bias voltage so that it remains substantially unanodized, and

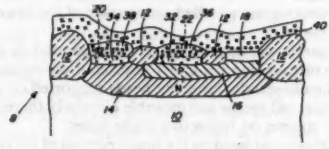
removing the aluminum deposited on said layer of dielectric material.

4,542,580

METHOD OF FABRICATING N-TYPE SILICON REGIONS AND ASSOCIATED CONTACTS

Peter Delivorias, Peabody, Mass., assignor to Prime Computer, Inc., Natick, Mass.

Filed Feb. 14, 1983, Ser. No. 466,076
Int. Cl.⁴ H01L *21/225*
U.S. Cl. 29—590 **8 Claims**



1. A method of fabricating an n-type silicon region and an associated electrical contact at an exposed surface of a p-type monocrystalline silicon substrate bounded by a dielectric, said method comprising the steps of:

depositing on said surface an amorphous silicon coating, said

coating comprising a first heavily phosphorous-doped layer and an arsenic-doped layer disposed between said phosphorus-doped layer and said surface;

selectively applying to said coating a sufficient amount of thermal energy to melt said coating; and

allowing a portion of said coating adjacent said surface to crystallize to produce a phosphorus-doped conductive monocrystalline silicon region and to provide heat sufficient to diffuse arsenic into said monocrystalline silicon substrate to form an annealed n-type monocrystalline silicon region in electrical contact with said p-type conductive silicon region.

4,542,581

METHOD FOR MANUFACTURING A TUBULAR PART FOR GENERATING A SPATIALLY ALTERNATING MAGNETIC FIELD WITHIN A MAGNET SYSTEM FOR GUIDING THE ELECTRON BEAM OF TRAVELLING-WAVE TUBES

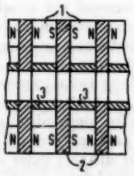
Roland Wolfram, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 28, 1983, Ser. No. 489,506

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216254

Int. Cl.⁴ H01P *11/00*

U.S. Cl. 29—600 **6 Claims**



1. Method for manufacturing a tubular component for a travelling wave tube, the component which consists of alternating soft-magnetic and non-magnetic rings, having axially magnetized ring-magnets, that are alternatingly magnetized in opposite directions, the method which comprises the steps of:

firmly placing a magnetically soft tube on a cylindrical body,

cutting the magnetically soft tube into individual ring-shaped, annular pole pieces having planar, lateral, parallel, radially oriented surfaces throughout,

inserting a ring of non-magnetic material between each two consecutive annular pole pieces,

soldering the non-magnetic rings to the annular pole pieces,

removing the cylindrical body after completing the soldering step, and

inserting a magnet between each two consecutive annular pole pieces.

4,542,582

RELAY ASSEMBLAGE AND A METHOD OF FORMING SAME

Shoji Tsunakawa, Yokohama, Japan, assignor to Original Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,185

Claims priority, application Japan, Aug. 1, 1983, 58-118695[U]

Int. Cl.⁴ H01H *11/02*

U.S. Cl. 29—622 **2 Claims**

1. A method of assembling a relay comprising the following steps:

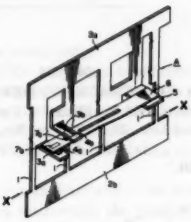
(a) providing a contact block of insulating material,

(b) providing a terminal strip of conductive material,

(c) forming laterally opened recesses in one side of the terminal strip to define depending legs,

(d) bending at least one of said depending legs at approximately right angles to a plane of the strip,

(e) inserting some of said legs into openings provided in the contact block so that end portions of at least said some of said legs extend downwardly through the contact block to define terminals, and so that a bent portion of at least said one depending leg forms a contact element on an upper surface of the contact block, and



(f) severing the strip contiguous with a top side of the contact block generally opposite from that which the terminals extend,

(g) providing a coil block having lower portions adapted to mate with resilient upstanding wall portions defined in the contact block, and assembling said blocks by resiliently deforming at least one of said upstanding wall portions of the contact block.

4,542,583

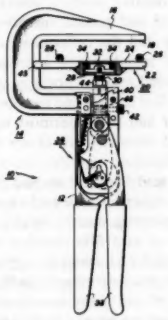
COMPRESSION HAND TOOL

James D. Anderson, Norwalk, and Patrick Crossin, Fairfield, both of Conn., assignors to Burndy Corporation, Norwalk, Conn.

Continuation of Ser. No. 305,317, Sep. 24, 1981, abandoned. This application Feb. 22, 1985, Ser. No. 704,156

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—749 **11 Claims**



1. A crimping tool for compressing an article comprising:

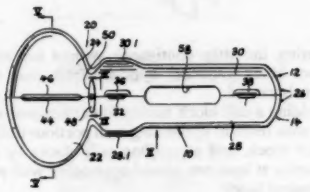
a. member means defining a substantially fixed jaw having a surface against which the article is compressed;

b. a ram having a surface for supporting a die and the article to be compressed, the ram being mounted for movement toward and away from the jaw and having tang means for engaging said member means, said tang means serving to maintain said ram in alignment with said member means;

c. drive means for moving said ram toward and away from said jaw, comprising: a piston means and means for connecting the piston means to the ram for pivotal movement about a first axis; and

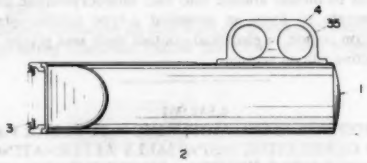
d. means for keeping the supporting surface of the ram substantially parallel to the compressing surface of the jaw in the event that the jaw pivotally deflects slightly about the first axis during operation of the tool whereby said tang means serves to maintain an alignment of said ram with said member means and said ram is maintained substantially parallel to said compressing surface of said compressing surface of said jaw thereby applying uniform pressure to the article as the article is compressed.

4,542,584
EGG CRACKING DEVICE
Marie L. C. Talbot, Old Pavillion St., Port Louis, Mauritius
Filed Dec. 20, 1982, Ser. No. 451,588
Int. Cl.[4] A47J *43/14*
U.S. Cl. 30—120.1 **1 Claim**



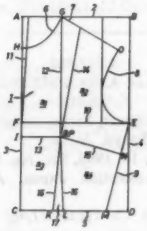
1. An egg cracking and emptying apparatus comprising:
chamber means for forming an egg receiving chamber, said chamber means being formed of a first concave member, forming half of said chamber means, and a second concave member, forming the other half of said chamber means, each of said first and second members having a top outermost portion and a bottom portion;
means for selectively permitting pivoting of said first member with respect to the second member along an axis passing through an egg disposed in said chamber means between a first relative position wherein the bottom portions of said first and second members are in abutment with each other and the outermost top portions of said first and second members are a predetermined distance apart, and a second relative position wherein the bottom portions of said first and second members are spaced apart from each other and the outermost top portions of said first and second members are closer together than said predetermined distance;
means for biasing said first and second members into abutment with each other to form said chamber;
a first egg shell piercing means, rigidly connected to the bottom portion of said first member and extending upwardly therefrom for piercing an egg shell;
a second egg shell piercing means rigidly connected to the bottom portion of said member and extending upwardly therefrom for piercing an egg shell, said first and second egg shell piercing means being substantially in abutment with each other in the first relative position of said first and second members whereby when an egg is placed into said chamber means, said first and second egg shell piercing means will extend into a bottom, central portion of said egg; and
means for selectively relatively pivoting said first and second members of said chamber means from the first to the second relative position thereof whereby the egg shell will be pulled in half and the liquid portion of the egg will, by gravity, drop down between the bottom portions of said first and second members.

4,542,585
HAIR CLIPPER
Kenzo Ito, and Shiro Mizobata, both of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Aug. 29, 1983, Ser. No. 527,433
Claims priority, application Japan, Sep. 20, 1982, 57-163555
Int. Cl.[4] B26B *19/02*
U.S. Cl. 30—210 **6 Claims**



1. A hair clipper for use in cutting human hair comprising a tubular housing having a longitudinal axis and adapted to be grasped by the hand of an operator,
a power driven cutter assembly mounted transversely across the forward end of the housing and including a movable cutter which is driven by drive means accomodated in the housing to reciprocate for cutting hair, and
finger hooking means projecting outwardly from the surrounding wall of the housing, the finger hooking means having at least one eye for receiving therein any one of the middle, ring, and little fingers of the hand grasping the housing so as to suspend the housing by the finger received in said eye and means mounting the finger hooking means for movement along said longitudinal axis toward and away from said cutter assembly, the means for mounting the finger hooking means comprising a longitudinally extending groove in the housing and a slider confined behind the groove for longitudinal movement along said groove, a screw passing through said finger hooking means and threaded into said slider so that the screw may be loosened, the finger hooking means and slider moved to a new longitudinal position and the screw tightened to hold the finger hooking means in the new position.

4,542,586
METHOD FOR CUTTING OUT A FRONT PART OF CLOTHING
Yuka Hori, 8-39, Hamatake 4-Chome, Chigasaki-shi, Kanagawa, 253, Japan
PCT No. PCT/JP83/00163, § 371 Date Jan. 24, 1984, § 102(e) Date Jan. 24, 1984, PCT Pub. No. WO83/04165, PCT Pub. Date Dec. 8, 1983
PCT Filed May 26, 1983, Ser. No. 584,939
Claims priority, application Japan, May 28, 1982, 57-89824
Int. Cl.[4] A41H *3/06*
U.S. Cl. 33—12 **2 Claims**



1. A method for cutting out a front part of clothing, wherein a human body is first drawn as a flat stereoscopic projection without a protruded portion of a breast and an external profile

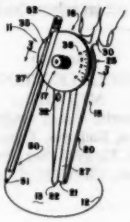
of a basic original pattern is made out by drawing a front neck line, a front shoulder line, a front sleeve line, a waist line and a proper breast line, and further forming at least four cutting lines toward the periphery of said profile from a bust point of the breast of the basic original pattern cutting said cutting lines and removing at least one cut portion so as to conform the pattern to the protruded portion of the breast, thereby forming a desired pattern with which a clothing material can be cut out.

4,542,587

DRAWING COMPASS APPARATUS

Clarence A. Emerson, 116 Sunset Blvd., Bozeman, Mont. 59715

Filed Jan. 24, 1984, Ser. No. 573,464
Int. Cl.[4] B43L *9/20*
U.S. Cl. 33—27 B **10 Claims**



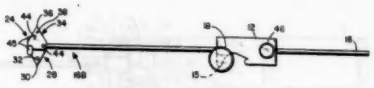
1. Drawing compass apparatus including an axis defining portion, a grip portion, and a fastening portion; said axis defining portion including an elongated leg member, said leg member having a blunt end section a short point section extending from a part of said blunt end section, a circular section disposed at an end of said leg member opposite to said blunt end section thereof, said circular section being disposed offset of a longitudinal axis of said leg member, one edge of said leg member being disposed tangentially of said circular section, a longitudinal groove extending along the full length of said axis defining portion, said circular section having a central opening offset from said longitudinal groove; said grip portion including a circular member disposed adjacent to said circular section of said axis defining portion, said circular member being substantially the same diameter as said circular section, said circular member including a central opening aligned with said central opening of said circular section, said leg member having a length significantly greater than the diameters of said circular section and said circular member, said circular member including a straight groove across a surface thereof, said groove being offset from said central opening thereof the same distance as the longitudinal groove of said axis defining portion is from said central opening of said circular section thereof, said straight groove of said circular member extending away from said circular section of said axis defining portion, said longitudinal groove of said axis defining portion extending away from said circular member, said longitudinal groove and said straight groove having depths less than about one-half the diameter of said marker member; said fastening portion extending through said central openings of said circular section and said circular member and securing same together, said fastening portion including a bolt member with a threaded section and an enlarged head section and a nut member engageable with said threaded section of said bolt member; whereby an elongated marker member may be inserted between said circular section and said circular member and aligned with said straight groove of said circular member and said circular member and said marker member rotated to be disposed at an angle to said leg member so that said apparatus can circumscribe a circle about said short point section thereof.

4,542,588

BEAM COMPASS

Frank D. Werner, Box SR9, Jackson, Wyo. 83001

Filed Oct. 9, 1984, Ser. No. 658,646
Int. Cl.[4] B43L *9/04*
U.S. Cl. 33—27 C **12 Claims**



1. A beam compass comprising:

a base having means for receiving a beam member and means for defining a center pivot, and including a portion extending from the base to a center pivot reference point;

an elongated beam member mounted on the means for receiving, the base being adjustable along the length of the beam member;

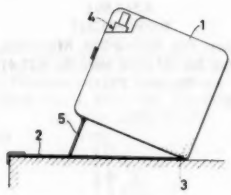
guide means carried by an outer end of the beam member for guiding a marking instrument, the guide means including a first portion extending from the beam member to a first reference point, the first portion having at least one aperture therethrough having a center located at the same radius from a pivot axis defined by the center pivot as the first reference point is from the center pivot reference point.

4,542,589

TAPE MEASURE

Masakazu Yamamoto, 64-4, 3-chome, Tutumi-cho, Yao-shi, Osaka, Japan

Filed Dec. 16, 1982, Ser. No. 450,554
Claims priority, application Japan, Jan. 25, 1982, 57-9830
Int. Cl.[4] G01B *3/10*; B43L *9/04*
U.S. Cl. 33—138 **2 Claims**



1. A tape measure comprising:

a substantially rectangular case having a top wall with a front corner edge, a bottom wall with a front corner edge, and an opening in the front corner edge of the bottom wall,

a tape being reeled in said case and capable of being drawn out through the opening in the front corner edge parallel to the bottom wall, and

a marker mounted on and parallel to the top wall of said case for marking a point or line on a surface of an article being measured,

said marker capable of being projected along the top wall of said case but spaced from and parallel to the bottom wall of said case;

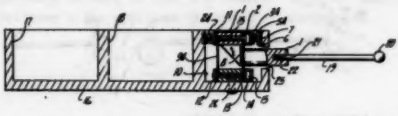
whereby, upon manual rotation of the front corner edge of the top wall of the case toward the drawn out tape, when pressed against the surface of the article being measured, the marker is projected from the front corner edge along the top wall of said case and comes into contact with the surface of the article so that the measured distance along said surface is marked.

4,542,590

TWO AXIS TOUCH PROBE

Robert F. Cusack, Grosse Pointe, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Filed Mar. 26, 1984, Ser. No. 593,506
Int. Cl.[4] G01B 7/28
U.S. Cl. 33—169 R **20 Claims**



1. In a touch probe having a stylus, a housing and an axis common thereto, apparatus for mounting the stylus for movement relative to the housing comprising:

a first member movable relative to the housing and capable of being coupled to the stylus;

a second member fixed relative to the housing;

means defining a line contact on one of the first and second members extending along a direction normal to the common axis;

first and second contact elements protruding from the other one of the first and second members, each contact element abutting in substantially point contact fashion the line contact in a rest position for the first member; and

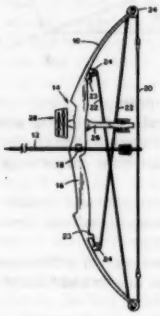
constraining means including at least two axially spaced resilient members each coupled at one of their ends to the movable member and at their opposite ends to the fixed member, each of said resilient members extending generally in the same direction normal to said common axis, said constraining means being operative to prevent all motion of the first member relative to the second member except for linear motion parallel to the common axis and pivotal motion in planes parallel to both the common axis and the line contact.

4,542,591

BOW SIGHT

Glenn Montgomery, Rte. 8, Box 285, Maryville, Tenn. 37801

Filed Jul. 3, 1984, Ser. No. 627,417
Int. Cl.[4] F41G 1/46
U.S. Cl. 33—265 **15 Claims**



1. A bow sight for a compound bow having a sight window, a bow string, cables and an arrow rest, comprising:

an elongated arm for attachment to the bow above and adjacent to the arrow rest on the side of the bow opposite the sight window, said elongated arm having an attachment portion for attaching said arm to the bow, a forwardly extending portion for extending outwardly from the front of the bow, and a rearwardly extending portion for extending outwardly from the rear of the bow and for being in a plane generally parallel to the plane of movement of the bow string, said rearwardly extending portion being laterally displaced toward the sight window from said attachment portion, said rearwardly extending portion having an engagement surface for contacting the cable and holding the cable away from the plane of the bow string, said rearwardly extending portion terminating at an end forward of the bow string;

means for fastening said attachment portion to the bow;

front sight means;

a front sight support attached to said forwardly extending portion of said arm for supporting said front sight means;

rear sight means;

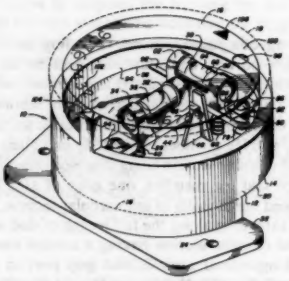
a rear sight support attached to said rearwardly extending portion of said arm between said bow and said end of said rearwardly extending portion, said rear sight support being spaced apart from said engagement surface, whereby said rear sight support does not interfere with the movement of the cables when the bow is in use.

4,542,592

WHEELED VEHICLE LEVELING DEVICE AND METHOD

Ross E. Hopkins, Emporia, Kans., assignor to Hopkins Manufacturing Corporation, Emporia, Kans.

Filed Nov. 22, 1983, Ser. No. 554,187
Int. Cl.[4] G01C 9/28
U.S. Cl. 33—386 **5 Claims**



1. A wheeled vehicle leveling device, including

a housing,

a longitudinal level indicating means pivotally mounted in said housing,

first means for adjusting said longitudinal level indicating means,

a lateral level indicating means pivotally mounted in said housing,

second means for adjusting said lateral level indicating means independently of said longitudinal level indicating means,

said lateral level indicating means including a cam follower means,

a cam ring means roatably mounted on said housing, including a spiral cam surface,

said cam follower means cooperating with said spiral cam surface to pivot said lateral level indicating means independently of said longitudinal level indicating means in response to rotation of said cam ring means,

said cam ring means bearing circumferentially spaced indicating means, and

pointer means fixed on said housing to cooperate with said indicating means to indicate the relative amount said lateral level indicating means has pivoted

said leteral level indicating means including means for holding a level indicating means,

said holding means comprising

a forwardly projecting cam follower means for cooperating with said cam ring spiral cam surface,

a rearwardly projecting adjustment arm,

an adjustable fulcrum means engaging said rearwardly projecting adjustment means, and

biasing means located between said holding means and said housing for biasing said adjustment arm against said fulcrum and biasing said cam follower means against said spiral cam surface.

4,542,593

APPARATUS FOR IMPROVING HEAT TRANSFER IN DRYING CYLINDERS OF A PAPER MACHINE AND METHOD FOR ASSEMBLING THE SAME

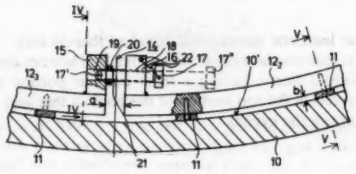
Olavi Viitanen, and Reima Kerttula, both of Jyväskylä, Finland, assignors to Valmet Oy, Finland

Filed Feb. 28, 1984, Ser. No. 584,340

Claims priority, application Finland, Mar. 1, 1983, 830676

Int. Cl.⁴ F26B *13/18*

U.S. Cl. 34—41 **12 Claims**



11. A method of installing means for increasing the turbulence of a condensate layer formed on the inner surface of a cylindrical mantle of a drying cylinder for use in the drying section of a paper machine to improve the heat transfer characteristics thereof, the mantle having an access opening provided at at least one of its axial ends, comprising the steps of:

inserting a plurality of turbulence ribs through the access opening of the mantle and positioning the same against the inner mantle surface so as to extend in a substantially axial direction through the hollow interior space of the mantle;

inserting a plurality of arcuate-shaped band parts through the mantle access opening;

assembling the band parts within the hollow interior space of the mantle to form a plurality of attachment bands, each attachment band being constituted by an assembly of at least three of the arcuate-shaped band parts with the free ends of each band part being situated adjacent to a respective free end of another band part to form pairs of adjacent free ends and by associating spring means with at least one of the pairs of adjacent free ends of the band parts to urge the adjacent free ends away from each other, said spring means exerting a force substantially in the same direction that the free ends move away from each other, the attachment bands so formed being mutually axially spaced from each other in the axial direction within the hollow interior space of the mantle;

attaching the attachment bands to the turbulence ribs; and

tensioning the spring means.

4,542,594

APPARATUS FOR REMOVING WATER FROM THE GROUND

Hugh R. McLaughlin, Aberdour, Bray Rd., Foxrock, Dublin 18, Ireland

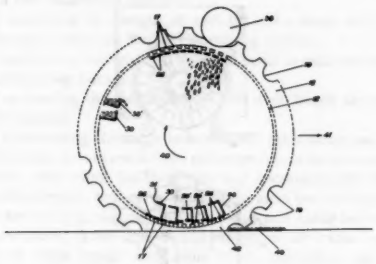
Filed Mar. 1, 1984, Ser. No. 585,083

Claims priority, application Ireland, Mar. 16, 1983, 576/83; Jun. 3, 1983, 1324/83

Int. Cl.⁴ E01H *1/00*

U.S. Cl. 34—71 **16 Claims**

1. An apparatus for the removal of water from the ground, comprising: at least one ground-engaging drum including a hollow cylinder mounted for rotation about a horizontal axis, a plurality of apertures distributed around a circumference of the cylinder, and a layer of resilient material covering an outer surface of the cylinder, the resilient layer including means distributed around its circumference to permit the passage of water through the resilient layer to the cylinder, valve means in the drum arranged to close the apertures at least in respect



of a lower region of the drum, except under an inward pressure of water passing through the resilient layer, a plurality of troughs on an inner surface of the cylinder for carrying water which enters the apertures in an area of ground contact upwardly away from the ground by rotation of the cylinder, and a non-rotating water tank mounted within the cylinder for collecting water discharged from the troughs when each trough reaches a certain height.

4,542,595

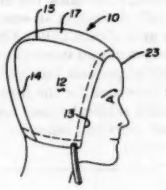
HAIR DRYING DEVICE

Sam Shon, 419 Glacierview Dr., Youngstown, Ohio 44509

Filed Jun. 4, 1984, Ser. No. 617,018

Int. Cl.⁴ A45D *20/00*

U.S. Cl. 34—95 **4 Claims**

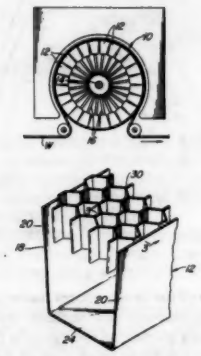


1. A hair drying cap conforming to the shape of a human head comprising a hood having a plurality of panels, means for securing said panels to one another, each of said panels comprising a multiple layer configuration of a highly absorbent material, said absorbent material is porous and formed from a plurality of pressed individually spun fibers, means for securing said hood to said human head, a randomly defined plurality of air spaces between layers of said multiple layer configuration of said panels, the highly absorbent materials forming the layers of said multiple layer configuration randomly abutting one another within the panel configuration and means for communication between said air spaces within said panels.

4,542,596
HONEYCOMB GRILLED CONDUIT

Edward T. Bryand, Saco, and Kenneth R. Randall, Gorham, both of Me., assignors to Honeycomb Systems, Inc., Biddeford, Me.

Filed Jul. 19, 1984, Ser. No. 632,313
Int. Cl.[4] F26B *13/00*
U.S. Cl. 34—115 **12 Claims**



1. A grilled conduit means for use in drying a paper web or the like comprising:

a plurality of independent conduits each of which includes means providing a channel having a pair of fixed spaced apart sidewall portions having outer edges defining a channel opening extending therebetween, said channel providing an enclosed constant volume interior chamber within said sidewall portions and having a passage through which a vacuum can be applied to the interior chamber, each of said sidewall portions having an inner surface facing the interior chamber,

and a honeycomb grill fixedly mounted on each channel providing means to extend across said channel opening and being in contact with portions of said inner surfaces adjacent said outer edges of said sidewall portions,

said honeycomb grill having a plurality of open cells therein through which a drying medium can flow into the interior chamber of said channel,

said conduits being mounted in side-by-side relation with the sidewalls of adjacent conduits being juxtapositioned to provide a dividing line region therebetween and with said honeycomb grills providing an extended drying surface,

said honeycomb grill of each conduit being raised outwardly of said outer edges of said sidewall portions from the inner surfaces thereof to provide between adjacent honeycomb grills an open flow area for the flow of drying medium in said dividing line region beyond said edges of juxtapositioned sidewall portions whereby a continuous drying surface is provided.

4,542,597
SNOW SHIELD FOOT AND LEG INSULATOR

Raymond J. Baptista, 15-8 Alger St., New London, Conn. 06320, and George Spector, 233 Broadway, Rm. 3615, New York, N.Y. 10007

Filed Mar. 5, 1984, Ser. No. 586,294
Int. Cl.[4] A41D *17/00*
U.S. Cl. 36—2 R **5 Claims**

1. A snow shield foot and leg insulator which comprises:

(a) an inner cloth tube for engagement with a foot and leg;

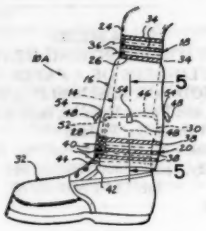
(b) an outer cloth tube having its top edge attached to top edge of said inner cloth tube forming a seam;

(c) a top sleeve attached to the seam for securing the seam to the leg; and

(d) a bottom sleeve attached to a bottom edge of said outer cloth tube for securing the bottom edge around a top portion of a boot placed onto the foot to prevent snow from seeping into the top portion of the boot wherein said top sleeve comprises:

(a) at least one elastic band attached thereto; and

(b) at least one lace integrated within said top sleeve wherein said bottom sleeve comprises:



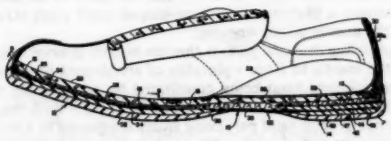
(a) at least one elastic band attached thereto and

(b) at least one lace integrated within said bottom sleeve, said bottom sleeve having a front cut out portion exposing eyelets in the top portion of the boot so that said lace can engage the eyelets.

4,542,598
ATHLETIC TYPE SHOE FOR TENNIS AND OTHER COURT GAMES

Kenneth W. Misevich, Fairfield, Conn.; Henry D. Cross, III, Colts Neck, N.J.; Roland E. Dube, Auburn, Me., and Rob R. McGregor, Concord, Mass., assignors to Colgate Palmolive Company, New York, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,779
Int. Cl.[4] A45B *5/10*
U.S. Cl. 36—114 **29 Claims**



1. An athletic shoe for tennis or other court games comprising a foot-receiving, sliplasted upper and separately formed first and second sole units, said upper being formed of flexible but essentially inelastic panels extending from end to end of said shoe and forming a flexible bottom underlying the wearer's foot along the length of said shoe, said sole units being spaced apart from each other and being connected together only through said upper, said first sole unit underlying the foorefoot of the wearer and terminating near the interface between the wearer's forefoot and midfoot, and said second sole unit underlying just the wearer's rearfoot, the portion of the flexible bottom underlying the midfoot and extending between said sole units forming an unsoled, flexible coupling, flexibly interconnecting said sole units, said first sole unit comprising a first midsole attached to said upper and a first outsole adhered to said first midsole, said second sole unit comprising a second midsole adhered to said flexible bottom and a second outsole adhered to said second midsole, each of said first and second midsoles being formed from a resilient, energy-absorbing, foamed polymeric material, the thickness of said second sole unit under the calcaneus being at least substantially uniform along the longitudinal axis of the athletic shoe.

4,542,599

SKI BOOT WITH A NORMALIZED SOLE

Giuseppe Annovi, Montebelluna, Italy, assignor to Dolomite, S.p.A., Montebelluna, Italy

Continuation of Ser. No. 306,386, Sep. 28, 1981, abandoned. This application Apr. 13, 1984, Ser. No. 625,965
Claims priority, application Italy, Nov. 12, 1980, 84157 A/80
Int. Cl.[4] A43B 5/04, 13/14
U.S. Cl. 36—117 8 Claims

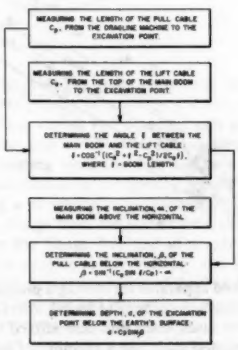
1. A ski boot having a sole and foot portion constructed for comfortable walking when a wearer is not engaged in skiing, a normalized sole attachment separate from the ski boot and being of a size, shape and hardness to be engageable with substantially any ski binding but rendering normal walking during non-skiing activity difficult and uncomfortable, rigid means peripherally around said upper above said sole portion, further rigid means peripherally around said sole attachment for complementary engagement with said first rigid means, and means on the ski boot and normalized sole attachment having interengagement for releasably securing the attachment to the ski boot.

4,542,600

METHOD FOR CONTROLLING THE DEPTH OF DRAGLINE EXCAVATING OPERATIONS

Gustave L. Hoehn, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 6, 1984, Ser. No. 668,919
Int. Cl.[4] E02F 3/46
U.S. Cl. 37—195 2 Claims


MEASURING THE LENGTH OF THE PULL CABLE C_p, FROM THE DRAGLINE MACHINE TO THE EXCAVATION POINT
MEASURING THE LENGTH OF THE LIFT CABLE C_L, FROM THE TOP OF THE MAIN BOOM TO THE EXCAVATION POINT
DETERMINING THE ANGLE ξ BETWEEN THE MAIN BOOM AND THE LIFT CABLE: $\xi = \cos^{-1}((C_p^2 + \ell^2 - C_L^2)/2C_p\ell)$, WHERE ℓ = BOOM LENGTH
MEASURING THE INCLINATION, α, OF THE MAIN BOOM ABOVE THE HORIZONTAL
DETERMINING THE INCLINATION, β, OF THE PULL CABLE BELOW THE HORIZONTAL: $\beta = \sin^{-1}(C_p \sin \xi / C_L) - \alpha$
DETERMINING DEPTH, d, OF THE EXCAVATION POINT BELOW THE EARTH'S SURFACE: $d = C_p \sin\beta$

1. A method for controlling the depth of an excavation operation being carried out by a dragline machine having a pull cable extending along the earth's surface to the excavation bucket below the earth's surface, a main boom extending to a position above the earth's surface and a lift cable extending downwardly from the end of said main boom to said excavating bucket below the earth's surface, comprising the steps of:

(a) conducting said excavation operation in an area where a fluid such as water, slurry, or the like fills the excavation channel being dug to such an extent that the excavation bucket is beneath the fluid level and is not visible to the dragline operator as it is being dragged along the bottom of the excavation channel;

(b) measuring the length of said lift cable from said main boom to said non-visible excavating bucket;

(c) measuring the length of said pull cable to said non-visible excavating bucket;

(d) measuring the inclination of said main boom above the horizontal;

(e) determining the angle between said main boom and said lift cable as it extends from said main boom to said non-visible excavating bucket from said measurements of lift cable length, pull cable length and main boom length;

(f) determining the inclination of said pull cable below the horizontal from said measurements of lift cable length, pull cable length and main boom inclination and said determination of the angle between said main boom and said lift cable as it extends from said main boom to said non-visible excavating bucket;

(g) determining the depth of said non-visible excavating bucket below the earth's surface from said measurement of pull cable length and said determination of the inclination of said pull cable below the horizontal, and

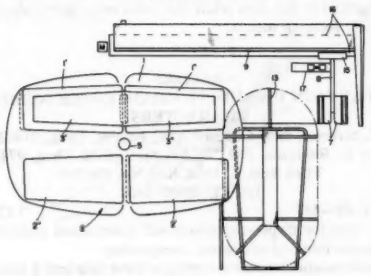
(h) adjusting the inclination of said main boom in response to said depth determination to cause the excavating operation to continue at a desired depth below the earth's surface.

4,542,601

TROUSERS IRONING MACHINE WITH AUTOMATIC TROUSERS PICKUP

Giovanni Cartabbia, Via Fusline, 36, 25036 Palazzolo Sull'Oglio (Brescia), Italy

Filed Nov. 14, 1983, Ser. No. 551,077
Claims priority, application Italy, Aug. 22, 1983, 22602 A/83
Int. Cl.[4] D06F 71/14, 71/28
U.S. Cl. 38—7 7 Claims



1. A trousers ironing machine, characterized in that it comprises a pair of side-by-side flat structures each including two portions of elongate shape and arranged sequentially lengthwise, said two elongate portions being controllably movable toward and from each other and jointly rotatable through 180° about an intermediate axis extending orthogonally to the plane of lay thereof, above one of said flat structures there being provided an ironing platen which can be brought to bear with an appropriate pressure on said one structure, and below said one structure there being arranged one or more sliding grippers operative to grip the ironed trousers at the waist and pull

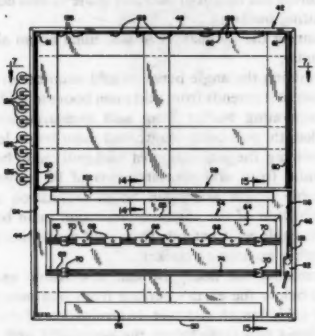
them out of said one structure and lay them onto gathering devices.

4,542,602

METHOD AND APPARATUS FOR MAKING A ROMAN SHADE

William D. Hoverson, c/o Dale's Draperies Inc., 12540 SE. Division, Portland, Oreg. 97236

Filed Jul. 1, 1982, Ser. No. 394,448
Int. Cl.[4] D06C 3/08; A41H 43/00
U.S. Cl. 38—102.1 **20 Claims**



1. An apparatus for making a Roman shade having plural horizontal rows of pleats, each pleat being secured at spaced locations along its length, from a sheet of flexible material comprising:

an upwardly extending pleater support;

pleat forming means mounted to said pleater support for forming pleats in the sheet of material, said pleat forming means projecting outwardly from the pleater support and the surface of the sheet, and having sheet contacting edges aligned in a direction normal to the side edges of the sheet and normal to the direction in which the pleater support is extending upwardly such that folding of the material about said pleat forming portion forms a pleat in the material, said pleat forming means including gaps along its length so as to permit the securing of the folded pleat of material at the gaps while the material is folded about the pleat forming means.

4,542,603

DISPLAY SIGN INCLUDING CHANGEABLE NUMERAL CHARACTERS

Bert E. Streeter, 4057 Concord Ave., Eugene, Oreg. 97402, and Larry G. Robinson, 660 "E" St., Springfield, Oreg. 97477

Filed Mar. 6, 1984, Ser. No. 586,849
Int. Cl.[4] G09F 3/04
U.S. Cl. 40—447 **7 Claims**

1. A sign for displaying numerical information including a changeable numeral character, comprising:

(a) a foundation member having a front side and a rear side and defining a background area of a background color on said front side and a plurality of apertures extending therethrough from said rear side to said front side;

(b) a plurality of flaps, each attached to said foundation member on said front side thereof in a respective location and each having a first face of said background color and second face of a second color different from said background color;

(c) means for attaching each of said flaps to said foundation member within said background area, said means for attaching including at least one retainer portion associated with each said flap and a respective spring clip extending through one of said apertures defined in said foundation member and around each retainer portion of said flap, resiliently urging said retainer portion of said flap toward a position in which said retainer portion is adjacent said front side parallel with said background area;

(d) each said spring clip including a central section, a pair of rearwardly-extending legs connected with said central section and extending approximately perpendicularly rearwardly therefrom, each having an outer end remote from said central section and an outwardly extending leg attached thereto and extending divergently forward

alongside said rearwardly-extending leg, each said spring clip having said central section located on said front side of said foundation member and said outwardly extending legs located on said rear side thereof and resiliently pressing against said rear side;

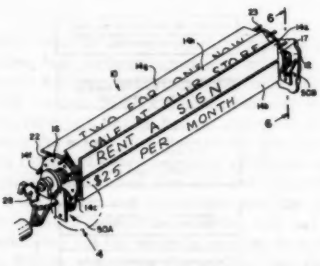
(e) a plurality of areas of said second color, each corresponding to a respective one of said flaps and located on said foundation member where a respective one of said flaps covers said area when said first face of said respective one of said flaps is exposed and exposes said area when said second face of said flap is exposed.

4,542,604

APPARATUS FOR STORING A PLURALITY OF SIGNS AND AUTOMATICALLY DISPLAYING SAID SIGNS AT PREDETERMINED TIMED INTERVALS

Robert E. Uihlein, Uniondale, and Walter C. Severson, East Meadow, both of N.Y., assignors to Signs by Severson Rend A Sign, Inc., Uniondale, N.Y.

Filed Apr. 19, 1984, Ser. No. 601,942
Int. Cl.[4] G09F 11/02
U.S. Cl. 40—475 **1 Claim**



1. An improved apparatus for storing a plurality of signs and automatically displaying them at timed intervals of the type having a pair of discs, each said disc affixed to the opposite ends of an elongated shaft and a plurality of panels, each said panel having copy placed on each side, pivotally mounted off center at each end around the periphery of said discs so that they can be displayed when they reach a strong display area in a rectangular box-like housing wherein the improvement comprises:

(a) a plurality of elongated pins, each pin placed on each side of each panel; and

(b) a pair of damping devices each of said damping device mounted within said housing adjacent one said disc, said damping device having a mounting plate affixed to a side portion of said housing, three different spring loaded adjustable cams pivotally affixed to said mounting plate to make operation of said apparatus smoother in appearance as said discs rotate, said three different spring loaded adjustable cams having a first cam member that is adjustably spring loaded by a spring tension adjustment member, a second cam member that is adjustably spring loaded by a spring tension adjustment member designed to make contact with the edge of said disc and to wedge said elongated pin between said second cam member and said first cam member as said discs rotate, and a third cam member designed to make contact with said second elongated pin on said second panel that has gone past said first and second cam members so that said second panel will be prevented from swinging back and forth and from hitting the other panels, and a modesty panel transversely affixed to said mounting plate to cover said cams when said damping device is mounted within said housing of said apparatus.

4,542,605

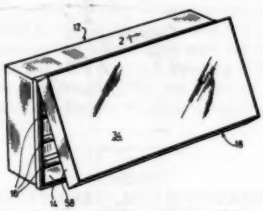
SIGN

James Gandy, Mississauga, Canada, assignor to Signtech Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 279,179, Jun. 10, 1981, Pat. No. 4,452,000. This application Oct. 11, 1983, Ser. No. 540,219

Int. Cl.[4] G09F *13/04*

U.S. Cl. 40—574 **8 Claims**



1. A sign comprising a rigid peripheral frame extending around an opening lying in a plane, a sheet of flexible sign material extending across the opening, said frame having a flange with a free end defining the periphery of the opening, said flange extending from the free end in a rearward and inward direction relative to the opening, the flexible sign sheet material having a peripheral edge portion extending over the free end of the flange from the plane of the opening and then extending from the flange free end in a rearwardly and inwardly direction relative to the opening, and a series of separate tensioning devices spaced around the frame rearwardly of the plane of the opening and inwardly of the periphery of the opening, each tensioning device comprising means for retaining the peripheral edge portion of the flexible sign material and means for adjusting the position of the retaining means relatively to the frame to cause the peripheral edge portion of the flexible sign sheet material to be pulled rearwardly and inwardly from the free end of the flange to tension the flexible sign sheet material across the opening.

4,542,606

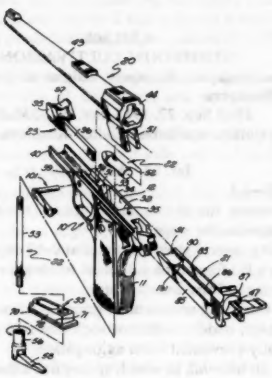
PISTOL STRUCTURE

George Hoenig, Boise, Id., assignor to Pachmayr Gun Works, Inc., Los Angeles, Calif.

Filed Jul. 13, 1983, Ser. No. 513,375

Int. Cl.[3] F41C *5/00, 21/22*

U.S. Cl. 42—75 B **36 Claims**



1. For use with a pistol receiver having a handle portion containing a recess for receiving a magazine holding a series of rounds of ammunition, conversion apparatus comprising:

a barrel formed separately from said receiver;

a connector structure having a portion received within said magazine recess in said handle portion of the receiver, with the magazine removed therefrom, and acting to detachably secure said barrel to the receiver; and

a bolt movable relative to said barrel.

4,542,607

AERODYNAMICALLY STABLE SURFACE RIDING WEEDLESS FISHING LURE

Earl Cartwright, 86 House Dr., Akron, Ohio 44319

Filed May 25, 1984, Ser. No. 614,028

Int. Cl.[4] A01K *85/04*

U.S. Cl. 43—42.52 **5 Claims**

1. An aerodynamically stable, surface riding, weedless fishing lure comprising:

a spoon shaped body member having a concave side and a convex side, rounded leading and trailing edges, wherein the leading edge is rounded at a greater radius from the trailing edge and having means to effect fishing line attachment at the leading edge;

a weight means positioned centrally on the rearward portion of the concave side;

a multiple barbed hook member having shanks extending generally from a centralized position on the concave side toward the trailing edge at an angle of between 10° to about 45° from a plane through the periphery of the body member and wherein the pointed ends of the hooks face

toward the leading edge of the body member and at least two hook ends are spaced from each other substantially equal to at least the width of the body member and;

a flexible tail member extending around the shanks of the hooks substantially rearwardly of the hooks and the body member.

4,542,608

MUSHROOM CULTIVATION

Kok K. Tan, Singapore, Singapore, assignor to Everbloom Mushrooms, Singapore

Filed Sep. 27, 1983, Ser. No. 536,260

Claims priority, application United Kingdom, Sep. 28, 1982, 8227624

Int. Cl.⁴ A01G *1/04*

U.S. Cl. 47—1.1 **4 Claims**

1. A process for the manufacture of mushroom spawn, which comprises the steps of:

(1) soaking cereral grains in water at 0–10 degrees C. (32–50 degrees F.) for a time sufficient to obtain swollen grains;

(2) draining off any excess water;

(3) heat-sterilizing said swollen grains in a first heat-sterilization stage, under conditions such that said grains are substantially prevented from aggregation;

(4) after an interval, in which spores not killed in the previous heat-sterilization stage are allowed to germinate, heat-sterilizing said swollen grains in a further heat-sterilization stage, again under conditions such that said grains are substantially prevented from aggregation;

(5) if desired, repeating step (4);

(6) inoculating the thus-heat-sterilized grains with a mushroom cell culture; and

(7) incubating the thus-inoculated grains, thereby obtaining muchroom spawn.

4,542,609

SUBSTITUTED 2-IMINO-1,3-DITHIO AND 1,3-OXATHIO HETEROCYCLIC COMPOUNDS AS HERBICIDAL ANTIDOTES

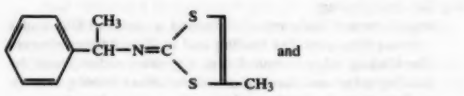
Frederic G. Bollinger, Creve Coeur, Mo., assignor to Monsanto Co., St. Louis, Mo.

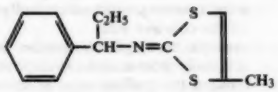
Division of Ser. No. 458,112, Jan. 14, 1983, Pat. No. 4,471,571, which is a continuation of Ser. No. 323,840, Nov. 23, 1981, abandoned, which is a division of Ser. No. 170,506, Jul. 21, 1980, Pat. No. 4,317,310, which is a division of Ser. No. 960,987, Nov. 15, 1978, Pat. No. 4,231,783. This application Sep. 13, 1984, Ser. No. 650,147

Int. Cl.⁴ A01C *1/06*

U.S. Cl. 47—57.6 **1 Claim**

1. Wheat seeds, the plants grown from which are resistant to injury by triallate herbicide, comprising crop seed coated with a safening effective amount of a compound selected from the group consisting of





and the agriculturally acceptable acid addition salts thereof.

4,542,610

FINISHING OR SEALING STRIPS

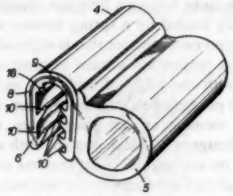
Erich Weimar, Viersen, Fed. Rep. of Germany, assignor to Draftex Development A.G., Zug, Switzerland

Filed Sep. 27, 1983, Ser. No. 536,329

Claims priority, application United Kingdom, Oct. 2, 1982, 8228227

Int. Cl.⁴ E06B *7/16*

U.S. Cl. 49—491 **9 Claims**



1. A channel-shaped finished or sealing strip, comprising

channel-shaped resilient material, a reinforcing channel-shaped carrier embedded within and running along the length of the resilient material, and

at least one longitudinally extending continuous member of wire form made of metal and which is spring-like but capable of taking a set when bent sufficiently and is fitted in a bore defined in the resilient material.

4,542,611

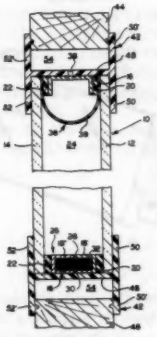
DOUBLE GLASS SHEET INSULATING WINDOWS

Ralph K. Day, 307 W. Harrison Ave., Maumee, Ohio 43537

Continuation-in-part of Ser. No. 255,160, Apr. 17, 1981, abandoned. This application Jun. 16, 1983, Ser. No. 504,836

Int. Cl.⁴ E06B *7/12*

U.S. Cl. 52—172 **7 Claims**



1. A multiple pane window structure comprising:

a pair of spaced apart panes of glass having an outer periphery defined by the outer marginal edges of said panes;

separating means between the facing surfaces of said panes for maintaining said panes in generally fixed, parallel, spaced apart relationship;

sealing means substantially impervious to the ambient atmosphere extending between and sealed to the spaced apart panes to define a chamber between said panes, said sealing means including pressure equalization means disposed inwardly of the marginal edges of said panes between the facing surfaces of said panes, said pressure equalization means being responsive to the ambient atmospheric pressure for altering the volume of said chamber to maintain the interior chamber pressure substantially equal to the ambient atmospheric pressure.

4,542,612

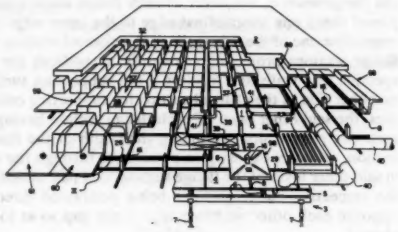
SYSTEM FOR FORMING STRUCTURAL CONCRETE

Andrew Daga, 122 Larchwood Ct., Collegeville, Pa. 19426

Division of Ser. No. 348,192, Feb. 12, 1982. This application Jun. 18, 1984, Ser. No. 621,724

Int. Cl.⁴ C04B *5/30*

U.S. Cl. 52—337 **39 Claims**



1. An apparatus for forming concrete structural elements comprising:

(a) falsework means for supporting the structural element in position during formation;

(b) a plurality of runners positioned on the falsework means to form an array;

(c) a plurality of supports engaging intersecting runners forming the array and extending from the array, each support further comprised of a base portion including a plurality of apertures and terminating in a pylon portion which defines a centrally disposed cavity and which terminates at an opening;

(d) a plurality of coffer plate means engaging the plurality of supports and combining to define a concrete receiving cavity; and

(e) anchor means for securing the coffer plate means to the supports and including means for interacting with concrete used in forming the structural element;

so that concrete poured into the concrete receiving cavity fills the cavity defined by the coffer plate means and interacts with the anchor means so that, after the concrete has cured and the falsework means has been removed, finishing components are capable of being suspended from the array of runners and supports without altering the concrete comprising the structural element.

4,542,613

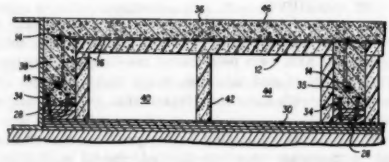
PRECAST CONCRETE BUILDING PANEL AND METHOD OF PRODUCING THE SAME

Marco A. Leyte-Vidal, 4699 SW. 59 Ave., Miami, Fla. 33155

Filed May 26, 1983, Ser. No. 498,600

Int. Cl.⁴ E04C *1/00*

U.S. Cl. 52—375 **11 Claims**



1. A precast concrete building panel, having a predetermined length, width and thickness, for use as wall, roof or floor sections comprising:

(a) a finished planar concrete surface forming a first side of the panel;

(b) box-like insert means for at least partially filling said panel and cast in said panel, said insert means formed of lightweight insulating material in rigid form and having,

1. an open side flush with and at least partially defining a second side of said panel,

2. a closed side disposed a predetermined distance from said planar concrete surface within the thickness of said panel, and

3. opposed side and end walls connecting the periphery of said closed side and extending outwardly to said second panel side, said opposed side and end walls being positioned a predetermined distance inwardly of the periphery of the panel;

(c) a relatively thin concrete panel portion disposed between said closed side of said insert and said finished planar concrete surface;

(d) thickened concrete beam portions extending around the panel between said opposed side and end walls and the periphery of the panels;

(e) a plurality of fastening strips each disposed adjacent one face of said thickened concrete beam portions and an outer peripheral edge of said insert means and extending along the length of the latter, anchor means for securing said fastening strips to said panel and being secured to each of said fastening strips and extending outwardly therefrom into embedded relation within said one thickened concrete beam portion, each of said fastening strips being thereby fixedly disposed in flush relation to and at least partially defining said second side of said panel, and

(f) said concrete panel, beam portion, fastening strips and insert means being permanently bonded together and forming an integral one-piece construction of said building panel.

4,542,614

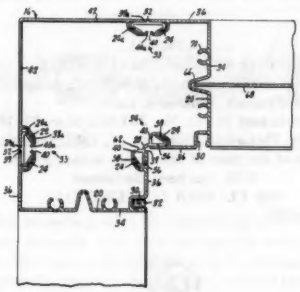
STRUCTURAL MEMBERS WITH INTERLOCKED COMPONENTS

Frank Malachowski, Columbia Station, Ohio, assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Dec. 27, 1982, Ser. No. 452,886

Int. Cl.⁴ E04C *1/10*

U.S. Cl. 52—586 **6 Claims**



1. A hollow structural member comprising

(a) a plurality of rigid wall sections cooperatively laterally enclosing an interior space, each of said wall sections having two parallel straight longitudinal free edges each disposed in proximate parallel relation to one of the longitudinal free edges of another of said wall sections to define therewith a joint between wall sections,

(b) each of said wall sections having an inner surface bearing two longitudinal lips respectively disposed adjacent the longitudinal free edges of the wall sections and diverging inwardly from the inner surface thereof, each said lip defining with its associated wall section inner surface a recess opening toward the adjacent longitudinal free edge

of the wall section, such that at each said joint there are two of said recesses respectively disposed on opposite sides of the joint and both opening toward the joint, each said lip having a free edge formed with a shoulder, and at least one of said joints being defined between longitudinal free wall section edges facing each other such that at said one joint, the recesses respectively disposed on opposite sides thereof open toward each other across the joint; and

(c) means, receivable in the recesses adjacent the joints between wall sections, for interlocking the wall sections at said joints, said interlocking means including an elongated spline insertable in the recesses respectively disposed on opposite sides of said one joint and comprising a web for bridging said one joint inwardly of the wall sections adjacent said one joint and legs extending inwardly from opposite sides of said web for respectively engaging the lips defining the last-mentioned recesses behind their shoulders,

(d) a longitudinal rib being formed integrally with and projecting outwardly from said web equidistantly from the sides thereof for engaging the facing longitudinal free wall section edges defining said one joint to limit the extent of lateral insertion of said spline into either of said last-mentioned recesses by acting as a stop for said lateral insertion;

(e) at least a second of said joints being defined between longitudinal free edges of wall sections respectively having inner surface portions, immediately adjacent said second joint, oriented in substantially perpendicular planes such that the included angle between them is about 270° and the recesses respectively disposed on opposite sides of said second joint open at about 90° to each other; and

(f) said interlocking means further including a second elongated spline, insertable in the recesses respectively disposed on opposite sides of said second joint, comprising a central portion bent longitudinally at about 90° for bridging said second joint inwardly of said last-mentioned wall sections, and legs extending inwardly from opposite sides of said central portion for respectively engaging the lips defining the last-mentioned recesses behind their shoulders, said central portion bearing two longitudinal ribs respectively projecting inwardly therefrom toward the shoulders of the two last-mentioned lips for engaging the last-mentioned shoulders to limit movement of said central portion toward either of the last-mentioned shoulders.

4,542,615

DROP CEILING FRAMEWORK

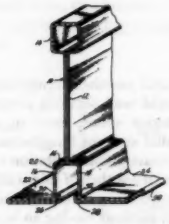
Francis L. McCall, Hacienda Heights, Calif., assignor to Specified Ceiling Systems, Alhambra, Calif.

Continuation-in-part of Ser. No. 363,603, Mar. 30, 1982, Pat. No. 4,434,599. This application Oct. 11, 1983, Ser. No. 540,516

The portion of the term of this patent subsequent to Mar. 6, 2001, has been disclaimed.

Int. Cl.[4] **E04B** *5/52*; **E04C** *3/30*

U.S. Cl. 52—729 **8 Claims**



1. A drop ceiling T-frame member comprising:

a web section formed of two sheet metal layers joined along a longitudinal edge, a channel section having two parallel side walls joined by a transverse wall, the sheet metal layers of the web section being joined along a longitudinal edge to the side walls of the channel section by respective sheet metal sections forming the transverse wall, the side walls of the channel section extending parallel to and away from the web section, a pair of flange sections lying in a common plane extending perpendicular to the plane of the web section, each flange section being formed of two layers of sheet metal joined along the outer edge of the flange section, one layer of each flange section being joined along one longitudinal edge to the outer edge of a respective one of the side walls of the channel section, the flange sections projecting outwardly away from the respective side walls and forming a flat supporting surface on either side of the channel section for supporting ceiling tiles, the said other layer of each flange section having at least one pair of slots extending the width of the flange section, each slot exposing said one layer through the slot in said other layer of the flange section, said pair of slots in the respective flange sections being positioned directly opposite each other on either side of the gap so as to be aligned.

4,542,616

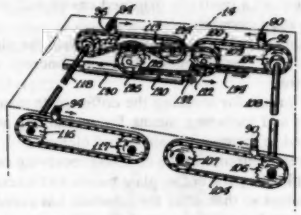
AUTOMATIC CARTON SEALING APPARATUS

Lawrence W. Ulrich, and Connie W. Walker, both of Bolingbrook, Ill., assignors to Durable Packaging Corporation, Chicago, Ill.

Filed Nov. 15, 1982, Ser. No. 441,842

Int. Cl.[4] **B65B** *61/00, 51/06*

U.S. Cl. 53—137 **4 Claims**



1. Apparatus of the type used for sealing the foldable flaps of cartons of random sizes, said apparatus including a frame structure, a vertically movable sealing head means mounted to said frame structure, and carton conveying means having a pair of facing longitudinally extending side arm means mounted to said frame structure so as to permit transverse movement of said side arm means towards and away from each other, said side arm means having upstream ends and downstream ends, said side arm means having endless conveyor belts engageable with opposite sides of said carton to move the same through said sealing head means; and improved mechanism for transversely moving said side arm means towards and away from each other comprising:

(a) four pairs of transversely spaced sprocket wheels supported for simultaneous rotation about a substantially horizontal axis, two pairs being associated with the upstream ends of said side arm means and two pairs being associated with the downstream ends of said side arm means;

(b) linkage means connecting the end portions of each of said side arm means to an associated one of said pairs of sprocket wheels;

(c) drive means for rotating said sprocket wheels in a clockwise and counter-clockwise direction, such rotary motion of said sprocket wheels being translated to linear motion at said side arm means through said linkage means; and

(d) direction reversing sprocket wheel means supported for rotation about a substantially horizontal axis, said direc-

tion-reversing sprocket wheel means being operationally connected to said upstream pairs of sprocket wheels whereby the direction of rotation of said upstream pairs of sprocket wheels is always opposed.

4,542,617

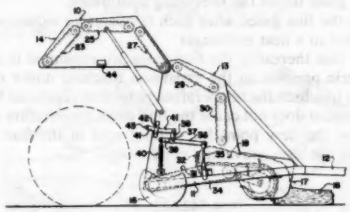
BALING MACHINE

Patrick Sonntag, Box 97, Goodsoil, Saskatchewan, Canada S0M 1A0

Filed Jun. 12, 1984, Ser. No. 619,923

Int. Cl.⁴ A01D *39/00*

U.S. Cl. 56—341 **9 Claims**



1. A baling machine comprising a substantially cylindrical housing, means at a bottom front position of the housing for feeding crop material into the housing, the housing including a front portion and a rear portion, means mounting the rear portion on the front portion for pivotal movement about a horizontal axis arranged adjacent to the top of the housing so as to open at an opening at a bottom rear position of the housing to allow a formed bale to escape from the housing, belt means within the housing defining a chamber for forming the fed material into a bale, means for halting feeding of said material into said chamber, said halting means consisting solely of a plurality of tines movable from a retracted position in which they lie outside the belt means and do not interfere with the formation of the bale to a raised position in which they project inwardly of the belt means, said tines being shaped to engage and halt material fed by said feeding means, said tines being fixedly mounted on a common pivotal member for common pivotal movement therewith and mechanical interconnecting means directly communicating movement of said rear portion of the housing to and from an open position to said common pivotal member to move said tines to and from the raised and retracted positions respectively.

4,542,618

THREAD PULL-OFF AID OF VARIABLE GEOMETRICAL CONFIGURATION FOR THE OVERHEAD DRAWING-OFF OF A THREAD FROM A CREEL BOBBIN

Ulrich Lossa, Krefeld, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Mar. 22, 1984, Ser. No. 592,230

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, 3310438

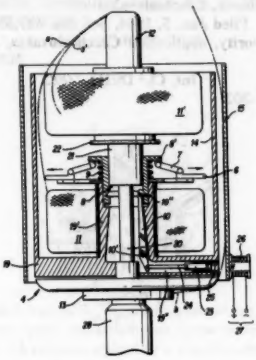
Int. Cl.⁴ D01H *13/10, 13/24;* B65H *49/00*

U.S. Cl. 57—58.83 **8 Claims**

1. A thread pull-off aid mechanism for use in a thread processing machine, in which thread is drawn overhead from at least one feed bobbin to be wound onto a winding bobbin, to prevent the thread being pulled off the feed bobbin from rubbing against or interfering with the outer windings of thread remaining on the feed bobbin, said thread pull-off aid mechanism comprising:

means of variable geometrical configuration adapted to be positioned in the thread processing machine at a position for contacting and guiding the thread being pulled off the feed bobbin away from the outer windings of thread remaining on the feed bobbin and for varying its geometrical configuration in relation to the diameter of the feed bobbin; and

means associated with said thread contacting and guide means for controlling the variation of the geometrical



configuration thereof including means for sensing the diameter of the winding bobbin, which increases as the diameter of the feed bobbin decreases, and for producing a control signal.

4,542,619

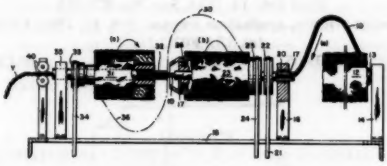
CORE YARN AND METHOD AND APPARATUS FOR MAKING

Nathan G. Schwartz, Bryn Mawr, Pa., assignor to Techniservice Division, Textured Yarn Company, Philadelphia, Pa.

Filed Nov. 21, 1983, Ser. No. 553,525

Int. Cl.⁴ D02G *3/36, 3/38, 1/20*

U.S. Cl. 57—210 **17 Claims**



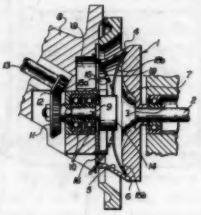
1. A yarn composed of a self-supporting core component having yarn strength, said core component being wrapped both clockwise and counter-clockwise by wrapper components, wherein the core component has a sinuous configuration and contains a greater length of core component per unit of yarn length than the length of each of the wrapper components for the same unit of yarn length.

5. The method of wrapping a self-supporting core yarn comprising the steps of advancing it under tension through a pair of endwise opposed oppositely rotating hollow spindles on which wrapper yarns are mounted, and wrapping said wrapper yarns around the pulled and tensioned core yarn between the hollow spindles under sufficiently high tension relative to the tension of the core yarn as to cause the core yarn to assume a sinuous configuration and to include within the wrapped yarn a longer length of core per unit length of wrapped yarn than the length of each of the wrapper yarns for the same unit length of wrapped yarn.

4,542,620
APPARATUS FOR CLEANING A ROTOR OF AN OPEN-END SPINNING UNIT

Oldrich Kase, and Stanislav Loucansky, both of Brno, Czechoslovakia, assignors to ELITEX, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Filed Jun. 5, 1984, Ser. No. 617,359
Claims priority, application Czechoslovakia, Jun. 13, 1983, 4262-83
Int. Cl.⁴ D01H *7/885*
U.S. Cl. 57—302 **6 Claims**

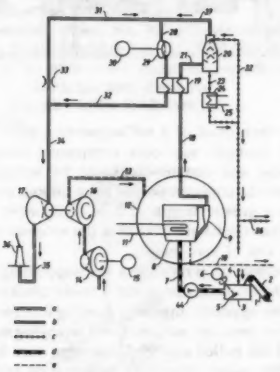


1. Apparatus for cleaning the interior of a hollow rotor of a spinning unit for the open-end spinning of yarn, comprising a cleaning head provided with cleaning elements assembled into the form of a rotary brush with bristles, the brush being attached to a shaft rotatably mounted in the head and connected to an outer drive, suction means provided within the body of the cleaning head, at least one projection at the rear side of the brush, on the body of the cleaning head, the projection being oriented transversely of the plane of movement of the bristles of the brush and outwardly of the head, whereby to bend bristles so that they enter the interior of the hollow rotor.

4,542,621
METHOD OF AND PLANT FOR COMBUSTION OF WATER-VAPOR GENERATING FUELS

Mikael Andersson; Per Hörlen, and Wieland Kraemer, all of Västerås, Sweden, assignors to AB ASEA Atom, Västerås, Sweden

Filed Feb. 13, 1984, Ser. No. 579,592
Claims priority, application Sweden, Feb. 15, 1983, 8300815
Int. Cl.⁴ F02C *3/26*
U.S. Cl. 60—39.05 **20 Claims**



1. A method for recovering energy from flue gases created during the combustion of a sulfur-containing, water-vapor generating fuel, in which pressurized flue gases are cooled while recovering a major part of the latent heat of evaporation of the water contained therein and while at least partially removing sulfur impurities contained in the flue gases, before the flue gases are expanded to atmospheric pressure in an expansion machine,

characterized in that

the cooling while recovering the latent heat of evaporation of water and while removing sulfur impurities is carried out by scrubbing with a flow of coolant liquid in drop form,

in that the flue gases, after scrubbing are mixed with a proportion of heated flue gases which has been scrubbed previously and then had its temperature raised in a heat exchanger, so that the temperature of the flue gases after said mixing exceeds the dew point for sulfuric acid in the flue gases under the prevailing conditions,

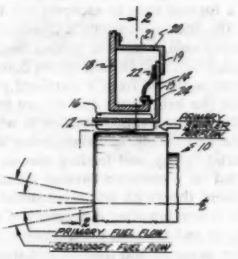
in that the flue gases, after such temperature enhancement, are led to a heat exchanger

and in that thereafter the flue gases are expanded to atmospheric pressure in the expansion machine under conditions in which the temperature reduction produced by the expansion does not cause the flue gases temperature to fall below the dew point for sulfuric acid in the flue gases under the then prevailing conditions.

4,542,622
VARIABLE AREA INLET GUIDE VANES

Walter Greene, South Windsor, and William R. Liebke, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 22, 1982, Ser. No. 400,787
Int. Cl.⁴ F02C *3/00*; B05B *7/10*
U.S. Cl. 60—39.23 **2 Claims**



1. For a gas turbine engine of the type that compresses air ingested thereby said engine having a combustor with a substantially closed front end, an aerating fuel nozzle mounted in an opening in said front end of said combustor for feeding fuel into said combustor, a first set of air inlet guide vanes for feeding air into said combustor in a manner to circumscribe the fuel jet spray issuing from said fuel nozzle, a second set of air inlet guide vanes for issuing air also to circumscribe the fuel jet spray surrounding said first set of air inlet guide vanes, self-actuating valve means solely responsive to the differential pressure upstream of said combustor and downstream of said combustor relative to the flow of air flowing into and out of said combustor for automatically activating said valve means to admit air to said second set of inlet guide vanes upon reaching a predetermined value of said differential pressure, an annular member having a depending lip attached to said front end of said combustor, said self-actuating valve means including a ring-like element having an extended portion subjected to said differential pressure in abutting engagement with said depending lip when said valve is blocking off the flow of air, a plurality of resilient members engaging said extended portion for imparting a force for urging said extended portion in sealing engagement with said depending lip, said pressure differential acting across said extended portion overcoming the force urged by said resilient members to deploy said extended por-

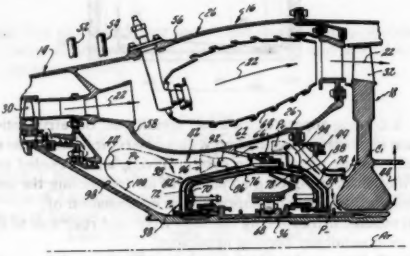
tion away from said depending lip whereby air is admitted to said second inlet guide vanes, whereby said valve means normally blocks off the flow of air to said second inlet guide vanes, said ring-like element partitions said first set of air inlet guide vanes and said second set of air inlet guide vanes.

4,542,623

AIR COOLER FOR PROVIDING BUFFER AIR TO A BEARING COMPARTMENT

Edward J. Hovan, Manchester, Conn., and Joseph P. Zimonis, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1983, Ser. No. 564,995
Int. Cl.⁴ F02C *7/06, 7/28*
U.S. Cl. 60—226.1 **5 Claims**



1. In an axial flow, turbofan gas turbine engine of the type having a fan section, a compressor section, a primary flow path for working medium gases which extends through the compressor section and a secondary flow path for working medium gases which extends through the fan section, and further of the type having a rotor assembly, a stator assembly which is spaced from the rotor assembly, an inner cavity adjacent the rotor assembly filled with gases from the working medium flow path, and a bearing disposed between the stator assembly and the rotor assembly for supporting the rotor assembly, and having a bearing housing which includes a casing extending circumferentially about the bearing to define a bearing compartment, the housing having at least one end adjacent the rotor assembly, the engine having a first seal means at said end of the housing which extends into proximity with the rotor assembly, the improvement which comprises:

a bearing housing disposed in said inner cavity which is spaced from the rotor assembly leaving a buffer cavity therebetween adjacent the seal means, the buffer cavity being in flow communication through a first leak path with the bearing compartment and in flow communication through a second leak path with the inner cavity;

a first flow path for cooling air for the turbine section which extends through the inner cavity from the compressor section to the turbine section, the cooling air having a pressure and a first temperature in the inner cavity; and,

a cooling system for providing pressurized cooling air at a temperature which is less than the first temperature of the cooling air flowed in the inner cavity from the compressor section to the turbine section, the cooling system including

a heat exchanger in flow communication with the working medium gases of the secondary flow path,

a duct for flowing pressurized air to the heat exchanger from a rear stage of the high pressure compressor,

a duct for flowing cooled air from the heat exchanger to the bearing compartment, and

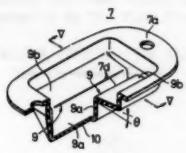
means for discharging said cooled air into said buffer air cavity.

4,542,624

DIAPHRAGM ASSEMBLY

Yoshinobu Mizusaki, Nagano, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Japan

Filed Jun. 9, 1982, Ser. No. 386,780
Claims priority, application Japan, Jun. 9, 1981, 56-84806; Jun. 9, 1981, 56-88475[U]
Int. Cl.⁴ F15B *7/00*
U.S. Cl. 60—535 **5 Claims**



1. In a sealed hydraulic reservoir comprising a main body having an open upper end and means at the lower end communicating with a hydraulic cylinder; a cap detachably mounted on the open upper end; and an elastic diaphragm interposed between said body and said cap to form an upper chamber which is in communication with the atmosphere and a lower chamber for containing hydraulic fluid; the improvement which comprises:

(A) said lower chamber being filled with said hydraulic fluid substantially free of an air space thereabove;

(B) said diaphragm normally comprising an upper peripheral flange; a depending peripheral wall portion; and a pair of opposed longitudinal lower steps, said lower steps each comprising a lower depending flat portion and an inclined upper flat shoulder joining said wall portion and said flat portion;

(C) said lower depending flat portions and said inclined upper flat shoulders causing any air bubbles entrapped in said fluid to rise and move outwardly along said inclined upper flat portion to escape between said upper peripheral flange and the upper end of said body; and

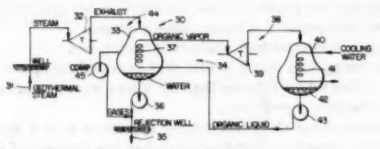
(D) said diaphragm, being capable of following the level of the fluid as the fluid level drops to thereby assume a shape conforming to the shape of said lower chamber when the level of said fluid reaches a predetermined lower limit wherein said upper flat shoulders form a continuation of said wall portion and said depending flat portions form a bottom floor.

4,542,625

GEOTHERMAL POWER PLANT AND METHOD FOR OPERATING THE SAME

Lucien Y. Bronicki, 23 Keren Kayemet St., Rehovot, Israel

Filed Jul. 20, 1984, Ser. No. 632,831
Int. Cl.⁴ F03G *7/04*
U.S. Cl. 60—641.2 **10 Claims**



1. A method for operating a geothermal power plant for generating power from geothermal steam containing noncondensible gases comprising:

(a) applying the geothermal steam to a steam turbine for producing work and exhaust steam;

(b) extracting heat from the exhaust steam in a steam con-

denser for collecting noncondensible gases and producing steam condensate such that the steam condenser operates at a pressure greater than or equal to about atmospheric pressure; and

(c) pressurizing said noncondensible gases from the condenser in a compressor;

(d) pressurizing said condensate; and

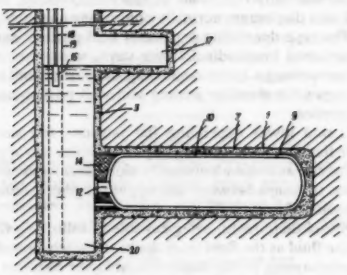
(e) returning the pressurized, noncondensible gases and the pressurized condensate to a rejection well.

4,542,626

METHOD AND APPARATUS FOR UNDERGROUND STORAGE OF AMMONIA AND ANALOGOUS PRODUCTS

Pierre Colin, Chavilly Larue, France, assignor to Societe Francaise de Stockage Geologique GEOSTOCK, France

Filed Mar. 26, 1984, Ser. No. 604,289
Claims priority, application France, Apr. 26, 1983, 83 06822
Int. Cl.[4] F17C *1/00*
U.S. Cl. 62—45 10 Claims



1. A method of storing underground a product, such as ammonia, which is liquefiable under pressure and which is miscible with water, said method comprising the steps of:

forming a double skin storage container within a cavity in a water-impregnated underground formation, at a depth such that the hydrostatic pressure of the water in the underground formation is greater than the pressure of storage of the product as a liquid, with said double skins spaced to define an intermediate space, said double skin container comprising an outer skin permeable to water and an inner skin impervious to water,

supplying said product to said container under pressure such that said product is liquid under storage,

filling said intermediate space with water, and

maintaining said water within said intermediate space at a pressure which is lower than the lowest expected pressure of the stored product;

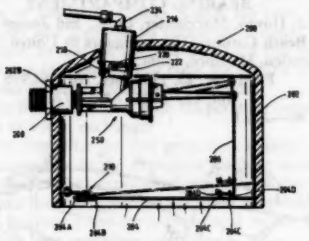
whereby, since the underground formation is at a hydrostatic pressure which is greater than the pressure of storage, water may pass from the formation through the outer skin into the intermediate space, thereby preventing the stored product from leaking into the surrounding formation, and wherein since the water within the intermediate space is at a pressure less than that of the liquified product within the inner skin, any product leakage is through the inner skin into the intermediate space.

4,542,627

COOLING APPARATUS FOR AIR CONDITIONER AND REFRIGERATION SYSTEMS

Mark L. Welker, Houston, Tex., assignor to A/C Research & Technology, Inc., Houston, Tex.

Filed Jul. 2, 1984, Ser. No. 626,661
Int. Cl.[4] F28D *3/00*
U.S. Cl. 62—171 20 Claims



1. A cooling apparatus for an air conditioner or refrigeration system in operative association with a reservoir of fluid, the air conditioner or refrigeration system having an air cooled coil and means for producing a current of air for cooling the coil, the cooling apparatus comprising the combination of:

(a) means for transferrng the fluid from said reservoir to the air conditioner cooling apparatus,

(b) a fluid control device mounted on the air conditioner and activated by the current of air for cooling the coil, said fluid control device having a pressure responsive means to modulate the pressure of the fluid from the reservoir, for directly engaging the flow of and the pressure of the fluid for restricting the flow of fluid therethrough when the means for producing the current of air for cooling the coil is not operative and for permitting the flow of fluid therethrough when the means for producing the current of air for cooling the coil is operative,

(c) a fluid treatment device in operative association with said means for transferring the fluid for substantially removing from the fluid the nonevaporative components therein,

(d) means for preventing the deposition on the air cooled coil of nonevaporative components in the fluid, and

(e) means for dispersing the fluid to the air cooled coil from said fluid control device for cooling the coil and increasing the efficiency of the air conditioner thereby reducing the cost of operating and maintaining the air conditioner without damaging the air conditioner and without the deposition of nonevaporative components thereupon.

4,542,628

COUPLED DUAL LOOP ABSORPTION HEAT PUMP

Paul H. Sarkisian, Watertown, Mass.; Robert C. Reimann, Lafayette, and Wendell J. Biermann, Fayetteville, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 13, 1984, Ser. No. 670,099
Int. Cl.[4] F25B *7/00*
U.S. Cl. 62—335 3 Claims

1. An absorption heat pump/refrigeration system comprising:

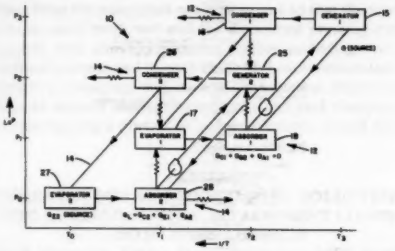
a first absorption system loop for operation within a first temperature range;

a second absorption system loop for operation at a second lower temperature range relative to said first loop;

said first loop having generator means, condenser means, evaporator means, and absorber means operatively connected together;

said second absorption system having generator means,

condenser means, evaporator means, and absorber means operatively connected together; and



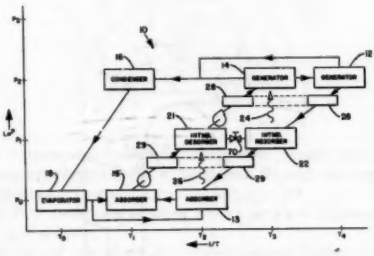
said first loop condenser means and said first loop absorber means in heat exchange relationship with said second loop generator means.

4,542,629

VARIABLE EFFECT DESORBER-RESORBER ABSORPTION CYCLE

Wendell J. Biermann, Fayetteville, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 5, 1984, Ser. No. 668,431
Int. Cl.[4] F25B *15/00*
U.S. Cl. 62—476 **1 Claim**



1. An absorption heat pump/refrigeration system having a single absorbent solution flowing therethrough comprising:

a first generator means operating within a first temperature range for heating a weak absorbent solution to generate a vaporized refrigerant and a strong refrigerant solution;

a second generator means operating at a second lower temperature range relative to said first generator means for heating a second weak absorbent solution to vaporize refrigerant;

a condenser means cooperating with said first and second generator means for condensing the vaporized refrigerant generated therein;

an evaporator means for receiving the condensed refrigerant from said condenser means, said condensed refrigerant in heat exchange relationship with a heat source means for vaporizing said condensed refrigerant within said evaporator means;

an absorber means for receiving the vaporized condensed refrigerant from said evaporator means in combination with a strong absorbent solution to absorb the refrigerant in the absorbent for generating a weak solution;

a desorber means for receiving said generated weak solution from said absorber means, and generating a refrigerant vapor therein;

a resorber means for receiving said refrigerant vapor from said desorber means in combination with said strong refrigerant solution of said first generator means for generating a resorber solution; and

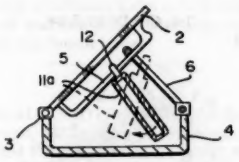
means for controlling the flow of said refrigerant vapor from said desorber means to said resorber means to control the capacity of the absorption system.

4,542,630

DECORATIVE ORNAMENT FOR A BAND OR CHAIN

John Nanasi, Englewood, N.J., and Ernest Reinitz, Yorktown Heights, N.Y., assignors to Nei Gold Products Inc., New York, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,856
Int. Cl.[4] A44C *5/00*
U.S. Cl. 63—3 **6 Claims**



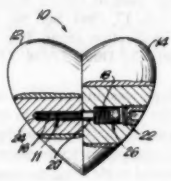
1. A flexible, elongated band means having a removable ornament means thereon, wherein said ornament means comprises a housing means having an open top, a bottom wall portion and opposed side wall portions, lever means pivotally mounted at one end thereof on one side wall portion, and bail means mounted on said opposed side wall portion for swinging between a first position wherein it is adjacent said bottom wall portion and a second position wherein it is remote therefrom, said lever means being pivotally movable between first and second positions wherein the open top of said housing means is closed and open, respectively, said lever means being operatively connected to said bail means to swing said bail means from its first position to its second position as said lever means is pivoted from its first position to its second position; said lever means being operable to engage and hold said band means in said ornament means when said lever means is in said first position and to be disengaged therefrom when said lever means is in said second position; and said band means has means at either end thereof cooperating with said lever means and said bail means to permit intentional separation and prevent unintentional separation of said ornament means from said band means when said lever means is in said second position.

4,542,631

JEWELRY AND THE LIKE ADAPTED TO DEFINE A PLURALITY OF OBJECTS OR SHAPES

William L. Esser, III, 4107 Cocoanut Rd., Lake Worth, Fla. 33461

Filed Nov. 16, 1983, Ser. No. 552,296
Int. Cl.[4] A44C *25/00*
U.S. Cl. 63—31 **11 Claims**



1. A novelty comprising:

a pair of arcuate lobes, each of said lobes having a plane end,

said plane ends being positionable with their edges contiguous to each other; and

means interconnecting said lobes in pivoting relationship with said plane ends urged into mutual contact which permit said lobes to be rotated from a first stable position in which the lobes form an ellipse configuration, to a second stable position in which the lobes form a heart configuration.

4,542,632

HAND-OPERATED KNITTING APPARATUS

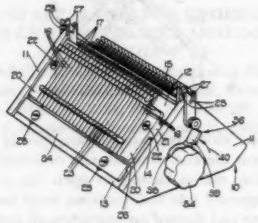
Patrick J. Reilly, 5 The Larches, Shootersway, Berkhamsted, Hertfordshire, HP4 3TX, England

Filed Mar. 30, 1982, Ser. No. 363,564

Claims priority, application United Kingdom, Apr. 14, 1981, 8111833

Int. Cl.⁴ D04B *7/04*

U.S. Cl. 66—64 **8 Claims**



1. Domestic-type hand-operated knitting apparatus comprising first and second generally flat needle beds, a plurality of knitting needles provided on each of said first and second beds in a manner so as to be movable between extended and retracted positions relative to said bed, said knitting needles of both said first and second beds when in their said extended positions co-operating to define a generally V-shaped recess for the reception of yarn to be knitted, and manually graspable knobs provided on said knitting needles respectively, whereby each said needle is individually manually movable between said extended and retracted positions, each of said needle beds including a plurality of spacers disposed in side-by-side relation, each adjacent pair of said spacers defining therebetween a gap in which a respective one of said needles is slidably located, at least one of said spacers in each said adjacent pair having a laterally extending projection thereon which bridges the gap between said adjacent pair of spacers and which locates over the respective needles in the gap to hold said needle in place.

4,542,633

AGITATING TYPE WASHING MACHINE

Hiroshi Hirooka, Tokyo; Yoshio Yoshida, Ayase; Toshio Fukushi, Hiratsuka, and Yasuo Takeya, Yokohama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nihon Kentetsu Co., Ltd., both of Tokyo, Japan

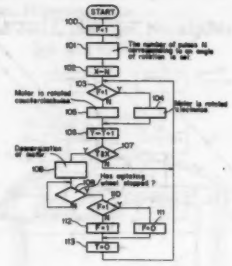
Filed Feb. 17, 1984, Ser. No. 581,154

Claims priority, application Japan, Feb. 21, 1983, 58-27461

Int. Cl.⁴ D06F *17/08, 33/02*

U.S. Cl. 68—12 R **12 Claims**

1. An agitating type washing machine of the type in which a washing drive motor is reciprocated in opposite directions to rotate an agitating wheel within a washing tank alternately in one and the other directions to perform intended washing, comprising a rotational angle detecting means for detecting an angle of rotation of said agitating wheel, and a control means for controlling said motor in response to a detection signal from said rotational angle detecting means, said control means interrupting energization of said motor when the angle of rotation of said agitating wheel reaches a predetermined value and controlling said motor to run in a reverse direction when



rotation of said agitating wheel by inertia in one direction comes to a stop.

4,542,634

STAKING MACHINE

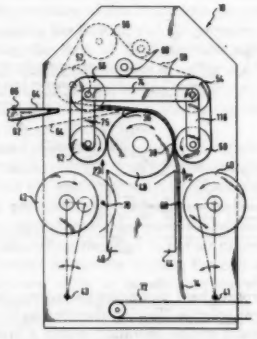
Karl Voit, Wunsiedler Strasse 39, D-8671 Weissenstadt, Fed. Rep. of Germany

Filed Jan. 20, 1983, Ser. No. 459,615

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1982, 3203619

Int. Cl.⁴ C14B *1/42, 1/40*

U.S. Cl. 69—34 **9 Claims**



1. A staking machine for treating leather, skins, furs or the like, comprising two rotatable work rolls each provided with staking blades on a circumference thereof; two resilient pressing means each associated with a respective work roll and spaced from the respective work roll to form a work gap and receive a workpiece in said work gap; conveying means for pulling the workpiece between each pressing means and the respective work roll; said conveying means comprising at least one rotary feed roll and two rotary clamping rolls arranged at opposite sides of said feed roll at 180° with respect thereto and for cooperation therewith so as to form a feed gap for receiving the workpiece between said feed roll and an associated clamping roll, said two rotatable work rolls and said two resilient pressing means being arranged at opposite sides of said feed roll, each of said work rolls being driven independently from one another and being operated alternatingly and the workpiece being conveyed to each of the work rolls and the associated pressing means by said feed roll and each clamping roll in an alternating fashion, said feed roll being switchable in both directions of rotation so that the workpiece is conveyed between one of said work rolls and the associated pressing

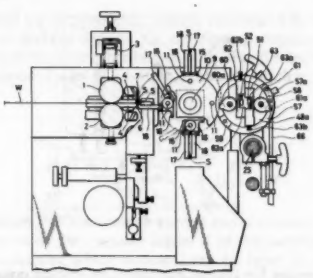
means and then between another of said work rolls and the associated pressing means by said feed roll and the respective clamping roll whereby the workpiece is staked during its conveying movement, each work roll being adapted to be shifted to and from the associated pressing means so that the work gap between each work roll and the associated pressing means is adjusted, said conveying means further including two additional rolls connected to each other and each connected to the respective clamping roll, and a continuation conveyor belt mounted around said additional rolls and said clamping rolls and overlapping a portion of a circumference of said feed roll.

4,542,635

APPARATUS FOR MANUFACTURING SOLID TENSION COIL SPRINGS HAVING ATTACHMENT LOOPS AT BOTH ENDS THEREOF

Takeji Matsuoka, Tokyo, Japan, assignor to MEC Machinery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 491,804, May 5, 1983, abandoned. This application Dec. 18, 1984, Ser. No. 682,491
Claims priority, application Japan, May 6, 1982, 57-75603
Int. Cl.⁴ B21F *35/02*
U.S. Cl. 72—14 **1 Claim**



1. Apparatus for manufacturing solid tension coil springs having attachment loops at both ends thereof, said apparatus comprising:

(a) first means for bending a wire into a solid tension coil spring body;

(b) second selectively operable means for feeding a wire to said first means;

(c) third means for sensing when a solid tension coil spring body formed by said first means has reached a predetermined length and for stopping the feeding of the wire to said first means when the solid tension coil spring body has reached that length;

(d) a shaft;

(e) fourth means for intermittently rotating said shaft through 1/n revolutions (n being a positive integer) when said third means senses that the solid tension coil spring body has reached its predetermined length, whereby said shaft is rotated to n positions during each complete revolution of said shaft;

(f) fifth means mounted on said shaft for releasably grasping a solid tension coil spring body when said shaft is in the first of the n positions;

(g) sixth means for severing the wire at the upstream end of the solid tension coil spring body, whereby the apparatus initially forms intermediate products comprising a solid tension coil spring body which does not have an attachment loop at either end thereof;

(h) two wedge tools sized and shaped to slide between adjacent coils of the solid tension coil spring body and to force the adjacent coils apart;

(i) seventh means for simultaneously forcing one of said wedge tools between the last and the next-to-last coil at each end of each solid tension coil spring body while said shaft is in another of the n positions;

(j) eighth means for simultaneously forming the last coil at each end of each solid tension coil spring body into an attachment loop while said shaft is in said another of the n positions after said seventh means has forced the last coil at each end away from the adjacent coil;

(k) ninth means for selectively varying the relative spacing and angular orientation of said seventh and eighth means so that the apparatus can be used to form attachment loops at both ends of solid tension coils spring bodies having different facing angles between the attachment loops and so that the apparatus can be used to form attachment loops at both ends of solid tension coil spring bodies having different numbers of turns and/or different diameters; and

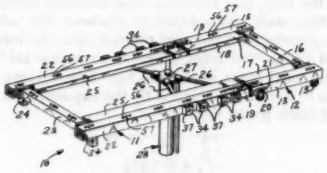
(l) tenth means for releasing a formed solid tension coil spring having attachment loops at both ends thereof from the grasp of said fifth means after said eighth means has formed the attachment loops.

4,542,636

BENCH FOR AUTOMOTIVE VEHICLE BODY SHOPS

William H. Wright, 1722 S. 27th Ct., Homewood, Ala. 35209

Filed Feb. 21, 1984, Ser. No. 581,997
Int. Cl.⁴ B21D *1/12*
U.S. Cl. 72—305 **1 Claim**



1. A bench for automotive vehicle body shops, comprising, in combination, a horizontally rectangular assembly of a main frame at one end and a secondary frame at an opposite end having caster wheels on its underside and forming a front of said bench, each said frame comprising a pair of tubes with a cross-bar therebetween, a pair of inverted "U"-shaped channels affixed alongside each said pair of tubes, said channels of both said frames being aligned to form a track for automotive vehicle wheels to ride thereupon, a sleeve between said aligned channels and telescopically receiving ends of said channels therein, means for detachable securement of said frames together; a vertical hydraulic lift cylinder assembly supporting said horizontal assembly thereupon, a plate upon the top of said hydraulic lift cylinder assembly, a plurality of radially extending arms between said plate and said main frame; downward legs under one end of said main frame for support upon a floor when said bench is in a lowered position, a plurality of brackets mounted along the side of each said main frame tubes, a plurality of clamp assemblies selectively supported in said brackets, each said clamp assembly comprising a post adjustably receivable in one said bracket, a lipped sleeve affixed on the top of said post, a bar slidably adjustable in said lipped sleeve and a two jawed clamp slidably adjustable on said bar; and a pulling arm assembly detachably attachable to said main frame crossbar.

4,542,637

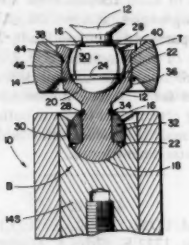
TUBE BENDING MANDREL

Samuel B. McGuire, Littleton, Colo., assignor to Bending Products, Inc., Englewood, Colo.

Filed Nov. 21, 1983, Ser. No. 553,791
Int. Cl.⁴ B21D *9/03*
U.S. Cl. 72—466 **4 Claims**

1. The subcombination for use with other like subcombina-

tions to form the bendable portion of a pipe bending mandrel which comprises: a rigid link having a front end and a rear end, ball-forming means on the rear end for detachable connection within a socket on the front end of an adjacent link therebehind effective to permit limited relative universal movement therebetween, a cylindrical neck forwardly of the ball-forming means, and stop-forming means on the front end; a tube-shaping ring having a cylindrical bore sized to receive the cylindrical neck of the link, a front face positioned and adapted to abut the stop-forming means when seated in place upon the cylindrical neck, and a rear face; a threaded connection interconnecting the neck of the link and the bore of the ring; and a retaining ring carried by the link in juxtaposition to the rear face of the ring, said retaining ring and stop-forming means cooperating with one another to maintain the tube-shaping ring in a preselected fixed axial position upon the link, and said threaded connection being effective to isolate said retaining ring from axial loads applied to said tube-shaping ring in a direction to force same rearwardly thereagainst while transferring said loads to the link.

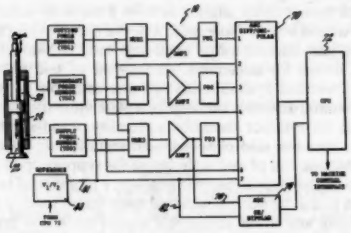


4,542,638

AUTOMATIC CALIBRATION OF SENSOR CIRCUITS IN GEAR SHAPERS

Erich Tlaker, Springfield, Vt., assignor to Fellows Corporation, N. Springfield, Vt.

Filed Sep. 16, 1983, Ser. No. 533,847
Int. Cl.⁴ G01L *27/02*
U.S. Cl. 73—1 R **9 Claims**



1. An apparatus for calibrating a sensor output by producing a corrected sensor output, said sensor for producing an analog electrical output signal representative of a predetermined sensed parameter, comprising:

a signal conditioning circuit operatively connected to condition said output signal;

a reference signal means for producing first and second reference signals;

multiplexer means connected to said reference signal means and interposed betwen said sensor and said signal conditioning circuit for selectively passing said output signal or either of said first and second reference signals to said signal conditioning circuit;

an analog to digital converter operatively connected to the output of said sensor and said signal conditioning circuit; and

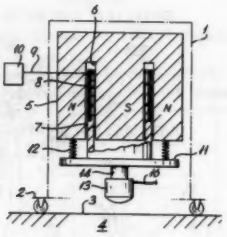
digital control means operatively connected to said converter output, said multiplexer and said reference signal means for periodically determining predetermined characteristics of said sensor and said signal conditioning circuit and for utilizing said predetermined sensor output signal, wherein said predetermined characteristics comprise the actual gain and output offset of said signal conditioning circuit utilizing said first and second reference signals as inputs thereto, and the output offset of said sensors.

4,542,639

TESTING OF STRUCTURES BY IMPACT

Peter Cawley, London, and Robert D. Adams, Bristol, both of England, assignors to National Research Development Corporation, London, England

Filed Apr. 2, 1984, Ser. No. 596,154
Claims priority, application United Kingdom, Mar. 31, 1983, 83 09030
Int. Cl.⁴ G01M *7/00*; G01N *29/04*
U.S. Cl. 73—12 **9 Claims**



8. Apparatus for testing structures by impact comprising:

an impactor;

a force transducer associated with the impactor, and adapted when the impactor makes impact with a structure to produce an output the magnitude of which is linearly related to the force to which the force transducer is subjected by reason of the impact, the output emcompassing a frequency range including the lowest frequencies which the force includes to any substantial degree;

a spectrum analyser adapted to receive the output of the force transducer and produce a test frequency spectrum of that output;

means to produce a reference spectrum indicative of the frequency spectrum of the impactor striking a reference structure;

means to compare the test and reference spectra automatically, and means to produce a signal indicative of a fit or lack of fit between the test and reference spectra.

4,542,640

SELECTIVE GAS DETECTION AND MEASUREMENT SYSTEM

Paul K. Clifford, 590 Military Way, Palo Alto, Calif. 94306

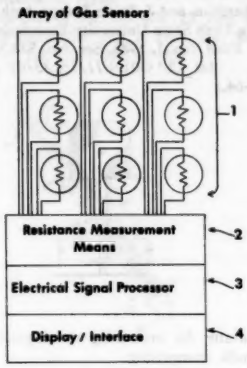
Filed Sep. 15, 1983, Ser. No. 532,651
Int. Cl.⁴ G01N *27/12*
U.S. Cl. 73—23 **16 Claims**

1. A system for selectively detecting, measuring, and identifying a selected number of gases in an atmosphere comprising:

a plurality of semiconductor sensors, greater or equal in number to the number of selected gases, each with a predetermined response characteristic which differs from the response characteristic of each of the other sensors in its response to at least one of the set of selected gases;

means, coupled to each of said sensors, for deriving a plural-

ity of electrical signals, each of said signals representing the response to said atmosphere of a respectively different one of said sensors; and



electrical signal processing means, responsive to said plurality of derived signals, for developing respective indications of the concentrations of each of said selected gases as solutions of a set of equations, each of which is of the form

$$F(R) = 1 + \sum_{i=1}^{L} \left(K_i \prod_{j=1}^{M} [G_j]^{n_{ij}} \right)$$

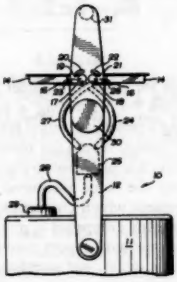
in which F(R) indicates a known and previously measured function of the response signal R of the particular sensor, j is a counter which indicates the gas type, M is the number of selected gases, $[G_j]$ represent the concentrations of the selected gases, n_{ij} are numerical constants of the particular sensor, Σ is the symbol representing summation, i is a counter which distinguishes individual terms in the summation, L is the total number of terms in the summation, π is the symbol representing products, and the K_i are previously measured numerical constants of the particular sensor.

4,542,641

METHOD AND MEANS FOR THE DETECTION OF CHEMICAL AGENT DROPLETS

Roger C. Eyler, 7501A Ridge Rd., Frederick, Md. 21701

Filed Dec. 7, 1983, Ser. No. 558,894
Int. Cl.[4] G01N *1/22*
U.S. Cl. 73—26 30 Claims



1. Means for adapting a chemical agent vapor detection and alarm device to respond to liquid droplets of a chemical agent, comprising:

a liquid droplet collector assembly mountable upon said detection and alarm device, said collector assembly having at least one droplet collector means adapted to be disposed in an attitude generally perpendicular to the path of falling droplets, said collector means including a sheet member permeable to air, said sheet member positioned at a location free from obstruction to said falling droplets and adapted to enhance the vaporization of liquid droplets falling thereupon;

housing means disposed about the lower side of said sheet member to form a chamber, and

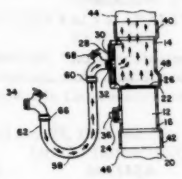
conduit means communicating between the interior of said chamber and a sample inlet port of said detection and alarm device.

4,542,642

PLUG FOR TEST TEE

Joseph Tagliarino, 107 S. Lincoln Ave., Tampa, Fla. 33609

Filed Jul. 24, 1984, Ser. No. 633,969
Int. Cl.[4] G01M *3/28*
U.S. Cl. 73—40.5 R 14 Claims



1. A testing device for testing a drainage system for leaks, said testing device being selectively connectible to a source of fluid flow, said testing device comprising in combination;

an elongate tubular member having a first and a second end, said tubular member being disposed in fluid tight series communication between the drainage system and a drain, said tubular member defining an internal annular ledge disposed between said first and said second end of said tubular member, said tubular member defining a first hole disposed longitudinally away from said ledge;

removable blocking means sealingly engaging said ledge for temporarily preventing the flow of fluid from the drainage system to the drain during the testing of the system for leaks;

access means defined by said tubular member for permitting access to and removal therethrough of said blocking means from said tubular member subsequent to the testing of the system, said access means and said first hole being disposed longitudinally on opposite sides of said blocking means

said access means including a first closure means for closing said access means, said closure means defining a second hole such that said second hole is selectively connectible to the source of fluid flow for filling the drainage system prior to testing thereof, said second hole being subsequently connectible to said first hole for permitting drainage of fluid between the drainage system and the drain subsequent to the testing of the drainage system for leaks and prior to the removal of said blocking means; and

a first and a second plug means for plugging said first and said second holes respectively subsequent to removal of said blocking means from said tubular member.

4,542,643

FLUID LEAK TESTING METHOD

Sydney Himmelstein, Barrington Hills, Ill., assignor to S. Himmelstein and Company, Hoffman Estates, Ill.

Filed Nov. 25, 1983, Ser. No. 555,204
Int. Cl.[4] G01M 3/26
U.S. Cl. 73—49.2 4 Claims

1. A method of determining fluid leakage from a pressurized container, said method comprising:

increasing the fluid pressure within the container to a preselected elevated value;

providing an enclosure;

decreasing the pressure within the enclosure to a predetermined vacuum value less than ambient sufficient to substantially eliminate undesirable pressure changes due to temperature changes in said enclosure;

storing the value of the vacuum pressure in said enclosure at a start time when both the elevated pressure in the container and the vacuum pressure in the enclosure have reached said predetermined values;

causing any leakage of fluid from said container after said start time to be received in the evacuated enclosure so as to cause an increase in the fluid pressure therein;

determining the final pressure in said enclosure at a test time subsequent to said start time; and

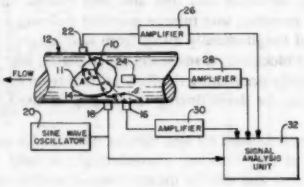
comparing said final pressure in said enclosure with said stored evacuated pressure therein to determine the increase in pressure therein resulting from such leakage as an indication of any such leakage.

4,542,644

VOID/PARTICULATE DETECTOR

Thomas N. Claytor, Woodridge, and Henry B. Karplus, Hinsdale, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 26, 1983, Ser. No. 535,979
Int. Cl.[4] G01N 15/06
U.S. Cl. 73—61 R 16 Claims



1. A method of detecting voids and particulates in a flowing stream of fluid contained in a pipe comprising:

(a) transmitting an ultrasonic signal into the stream at a first location along the pipe;

(b) detecting the through-transmission of said signal at a second location along the pipe;

(c) detecting the back-scattering of said signal at a third location along said pipe, upstream from said first location, and

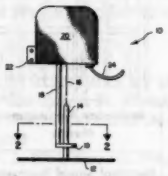
(d) normalizing the back-scattered signal to the through-transmitted signal, which normalized signal is a measure of the voids and particulates flowing past said first location.

4,542,645

APPARATUS AND METHODS FOR MEASURING MILK COAGULATION TIME AND RIGIDITY IN THE MANUFACTURE OF FERMENTED DAIRY PRODUCTS

Gary H. Richardson, and J. Derle Thorpe, both of Logan, Utah, assignors to Utah State University Foundation, Logan, Utah

Filed Sep. 1, 1983, Ser. No. 528,732
Int. Cl.[4] G01N 11/16, 33/04
U.S. Cl. 73—64.1 32 Claims



1. An apparatus for measuring rheological parameters of coagulating milk, comprising:

a probe which is substantially flat in a horizontal direction;

means for suspending said probe into a vessel of coagulating milk;

means for reciprocating said probe in a vertical direction; and

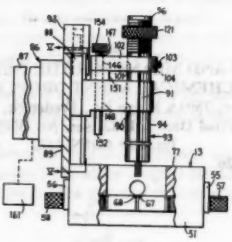
means for measuring the resistance to the probe as it reciprocates through the coagulating milk.

4,542,646

TABLET HARDNESS TESTER

Daniel J. Smith, Parchment; Jessie F. Glasscock, Jr.; Richard P. Poska, both of Kalamazoo, and Carl L. Kuder, Brady Township, Kalamazoo County, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 12, 1984, Ser. No. 659,993
Int. Cl.[4] G01N 3/40, 3/08
U.S. Cl. 73—78 22 Claims



1. In an apparatus for measuring tablet hardness, including ram and anvil means for fracturing a tablet therebetween; means for supporting a tablet in position for fracturing between said ram and anvil means, means for measuring the force exerted by said ram which is sufficient to fracture said tablet, and means for indicating the force measured by said measuring means, the improvement which comprises:

said supporting means comprises a plurality of horizontal, spaced-apart, elongated support members for supporting the underside of a tablet, said members having a diameter small enough so that pieces of said tablet, after said tablet has been fractured by said ram and anvil means, can fall past and below said support members.

4,542,647
BOREHOLE INERTIAL GUIDANCE SYSTEM

Daniel O. Molnar, Seattle, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 468,725, Feb. 22, 1983, abandoned. This application Jun. 5, 1984, Ser. No. 617,355
Int. Cl.[4] E21B 47/024
U.S. Cl. 73—151 30 Claims

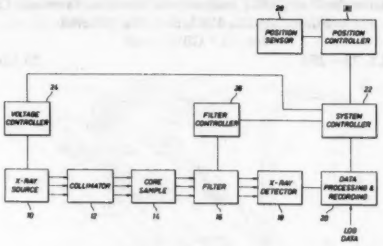
1. A borehole survey apparatus comprising:
a borehole probe for insertion in a borehole;
control means for controlling the movement of said probe in the borehole;
means for generating a signal representative of the angular rotation of the earth;
acceleration means secured within said probe for generating three acceleration signals representing the components of acceleration of said probe with respect to three axes;
first angular means secured within said probe for generating two rotation signals representing the angular rotation of said probe with respect to two axes of rotation;
means responsive to said acceleration signals for generating when said probe is moving a first synthetic angular rotation signal representing the angular rotation of said probe about a third axis of rotation different from said two axes of rotation;
means responsive to said signal representative of the angular rotation of the earth for generating when said probe is not moving a second synthetic angular rotation signal representing the angular rotation of said probe about said third axis of rotation;
transform means responsive to said rotation signals and at least one of said first and second synthetic rotation signals, said transform means including means for providing a transformation signal for transforming signals representing probe movement in a probe referenced coordinate system to an earth referenced coordinate system; and
first computation means operatively connected to said transform means and acceleration means for converting said acceleration signals into a first set of velocity signals representing the velocity of said probe.

4,542,648
METHOD OF CORRELATING A CORE SAMPLE WITH ITS ORIGINAL POSITION IN A BOREHOLE

Harold J. Vinegar, and Scott L. Wellington, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 29, 1983, Ser. No. 566,611
Int. Cl.[4] E21B 49/00
U.S. Cl. 73—153 11 Claims

1. A method of correlating a core sample with its original position in a borehole, said method comprising the steps of: logging the borehole to determine the bulk density of the formation surrounding the borehole; scanning the core sample with a computerized axial tomographic scanner to determine the attenuation coefficients at a plurality of points in a plurality of cross sections along said core sample; comparing the bulk density log determined in said logging step with the plurality of attenuation coefficients determined in said scanning step to

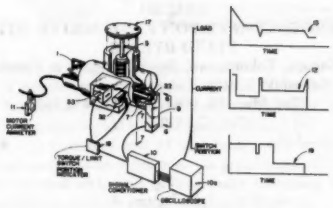


determine the position to which said core sample correlates in said borehole.

4,542,649
MOTOR OPERATED VALVE ANALYSIS AND TESTING SYSTEM

Arthur G. Charbonneau, Marietta; Dwaine A. Godfrey, Fulton; John A. McNennamy, Cobb, and Steven Nafziger, Gwinnett, all of Ga., assignors to Charbonneau and Godfrey Associates, Marietta, Ga.

Filed Jul. 19, 1983, Ser. No. 515,358
Int. Cl.[4] G01M 19/00
U.S. Cl. 73—168 6 Claims



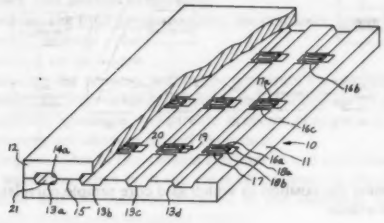
1. In combination, a valve operator including a movable valve stem and a worm, driven by a motor and a spring means for reacting to stem thrust, and a torque/limit switch means for indicating when the worm has developed a predetermined load, said torque/limit switch means being a switch means comprised of torque and limit switches, a valve stem load calibration device, said valve stem load calibration device being a device that allows for measuring the load on said valve stem, said spring means comprising a cluster of compression springs hereinafter called a spring pack, a spring pack movement monitoring device, a motor current measuring device, a torque and a limit switch position indication device for indicating the positions of each switch in said torque/limit switch means, and a correlating and recording device for providing an interrelated time relationship of valve operator parameters, said parameters comprising those determined by the aforesaid indicating, measuring and monitoring devices, of which parameters are used as a verification and diagnostic tool to determine the operating characteristics of the valve operator and the imposed load on the valve stem.

4,542,650

THERMAL MASS FLOW METER

Wayne G. Renken, San Jose, and Dan B. LeMay, Palos Verdes Estates, both of Calif., assignors to Innovus, Fremont, Calif.

Filed Aug. 26, 1983, Ser. No. 526,860
Int. Cl.⁴ G01F *1/68*
U.S. Cl. 73—204 **20 Claims**



1. A thermal mass flow meter for fluids comprising a first substrate;

a continuous elongated fluid-flow channel having side walls and a bottom extending on a surface of said first substrate from one edge of the first substrate to an opposed edge of the first substrate for conveying a fluid to be measured through said channel, said first substrate having at least two integral members spaced from each other and extending transversely across at least a portion of said channel and spaced from the channel bottom such that said fluid passes transversely of and under and over said members;

means for forming a temperature sensor on each of said members; and;

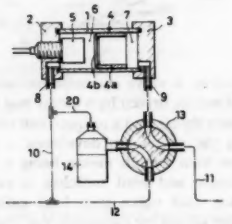
means on at least one of said members for heating said fluid to provide a temperature difference between said sensors when fluid is being conveyed.

4,542,651

RECIPROCATING PISTON FLOW METER WITH A FLUID BYPASS

Makoto Sanada, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 474,189
Int. Cl.⁴ G01F *3/14*
U.S. Cl. 73—250 **4 Claims**



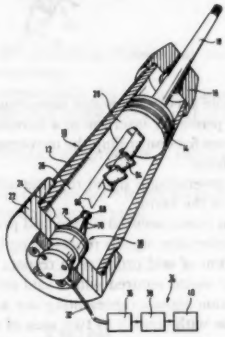
1. A flow meter of the type that a displacement amount of a free piston resulting from the same being moved in a cylinder by supplying fluid thereinto is detected by a non-contact type detecting means to measure a flow rate of the fluid, characterized in that there is provided a bypass connecting between fluid inflow and outflow pipes which are connected to both end portions of the cylinder; and there is additionally provided a source of fluid to be measured and a separate forcible returning means for returning the free piston to its original position operated simultaneously with opening of the foregoing bypass after the completion of an advancing stroke of the free piston, said forcible returning means comprising a pump interposed in the bypass; and in that the free piston is constructed by a combination of a nonconducting material tubular body and a conductive material end plate closing at least one end opening of the tubular body.

4,542,652

METHOD AND APPARATUS FOR DETERMINING A RELATIVE DISTANCE IN A CYLINDER AND PISTON ASSEMBLY

Martin Reuter, and Johannes König, both of Allacher Strasse 60, D-8047 Karlsfeld, Fed. Rep. of Germany

PCT No. PCT/DE82/00074, § 371 Date Nov. 30, 1983, § 102(e) Date Nov. 30, 1983, PCT Pub. No. WO83/03478, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 30, 1982, Ser. No. 561,588
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—597 **11 Claims**



1. A method for determining the distance between a cylinder **(12)** and a piston **(14)** in a piston and cylinder assembly **(10)**, which has a cylinder chamber **(26)** filled with a fluid medium and including end walls formed by the cylinder **(12)** and piston **(14)** comprising the steps of:

transmitting a group (S) of sequential ultrasonic oscillations from a first end wall **(24)** of the cylinder chamber **(26)** toward the second end wall **(28)** for reflection in the vicinity of the second end wall as a group (M) of measurement oscillations, the step of transmitting being performed by an ultrasonic converter supported at the first end wall **(24)** and including an incompressible carrier **(44)** having a flat surface **(46)**, a plate-shaped piezoelectric oscillator **(48)** positioned parallel to the flat surface **(46)** and, in spaced relationship from the surface, a sound projecting surface **(42)** positioned parallel to the oscillator **(48)** and facing the second end wall, and means **(50, 52, 54)** for mismatching the characteristic impedance of the oscillator **(48)** and the carrier **(44)**, and means **(56, 58, 60, 62)** for matching the impedance between the oscillator and the sound projecting surface **(42)**;

receiving the group (M) of measurement oscillations at the first wall after reflection in the vicinity of the oppositely disposed second wall for measurement of the elapsed travel time of the oscillations between transmitting of the group (S) of ultrasonic oscillations and the receipt of the group (M) of measurement oscillations to establish a measure of the relative distance;

establishing a reference path **(42, 66)** of a prescribed length within the fluid medium of the cylinder chamber **(26)** with a reflection surface **(66)** at one end of the path;

transmitting a group of ultrasonic oscillations along the reference path from a first end for reflection at the surface **(66)** at the opposite second end;

receiving the oscillations reflected from the reference reflec-

tion surface (66) as a group (R) of reference oscillations at the first end;

measuring the elapsed travel time (T_R) between the transmission and receipt of the ultrasonic oscillations along the reference path at the first end (42) and producing a reference signal proportional to the elapsed time; and

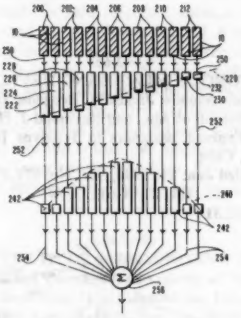
establishing the relative distance between the cylinder and piston by modifying the measurement of the elapsed time of the group (M) of measurement oscillations in accordance with the reference signal as compensation for the influence of different propagation conditions within the cylinder chamber.

4,542,653

APPARATUS AND METHOD FOR BEAMFORMING IN AN ULTRASONIC TRANSDUCER ARRAY

Ren-Young Liu, Mesa, Ariz., assignor to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Nov. 21, 1983, Ser. No. 554,017
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—626 **6 Claims**



2. An ultrasound apparatus including an array of acoustic transducer elements for providing both transmit and receive functions for said ultrasound apparatus comprising:

means for applying simultaneously a beam steering linear time delay distribution and quadratic focusing time delay distribution to said array of elements; and

means for electronically changing the effective spacing of said elements between transmit and receive functions whereby the grating lobe levels of the pattern of said array are lowered, said means for changing comprising:

means for forming adjacent groups of said elements with each group comprising at least two elements; and

means for applying simultaneously a linear time delay distribution and a quadratic focusing time delay distribution to said groups of elements, the time delay to each element in a group being the same.

4,542,654

BOURDON TUBE CONSTRUCTION

Harold W. Wilson, and Richard H. Wetterhorn, both of Fairfield, Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

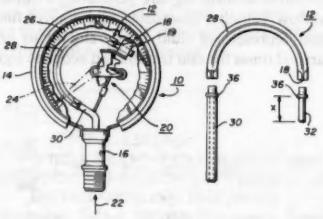
Filed Nov. 18, 1982, Ser. No. 442,533
Int. Cl.⁴ G01L *7/04*
U.S. Cl. 73—741 **4 Claims**

1. A Bourdon tube comprising in combination:

(a) a duct-like displacement portion of non-circular section substantially throughout its length and having an arcuate extent of substantially about 180 degrees and terminating at opposite ends with end faces in a substantially coplanar relation;

(b) said displacement portion including an opening defined in each end face with each of said openings being dimensionally smaller than the corresponding end face dimension of the end face in which the respective openings are contained;

(c) a relatively non-displacement elongated duct-like portion of substantially circular section having a first end secured in pressure tight relation communicating inward of one



end opening of said displacement portion and having a second end adapted for connection to a pressure instrument with which it is to be utilized; and

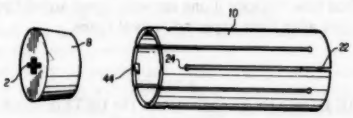
(d) a plug secured in a pressure tight seal to the other end opening of said displacement portion.

4,542,655

BOREHOLE STRESS-METER AND METHOD AND APPARATUS FOR THE INSTALLATION THEREOF

Duk-Won Park, Northport, and Theodore W. Ryan, Moundville, both of Ala., assignors to University of Alabama, University, Ala.

Filed May 9, 1984, Ser. No. 608,654
Int. Cl.⁴ G01B *7/16*; G01N *33/24*
U.S. Cl. 73—784 **23 Claims**



1. A borehole stress-meter comprising:

a hollow body having a first longitudinel axis, said body defining an internal bore extending from a first end of said body to a second end of said body, said bore having a cross-section which decreases in area from said first end to said second end, said hollow body including means for permitting resilient radial expansion thereof;

a gage plug having a shape corresponding to at least a portion of said bore and being sized so that said gage plug can fit in said first end of said bore, and not in said second end of said bore, without causing said radial expansion of said hollow body;

at least one strain gage fixed on at least one surface of said gage plug, said strain gage adapted for emitting a signal proportional to a strain of said gage plug; and

signal processing means operatively connected to said at least one strain gage for processing said signal.

4,542,656

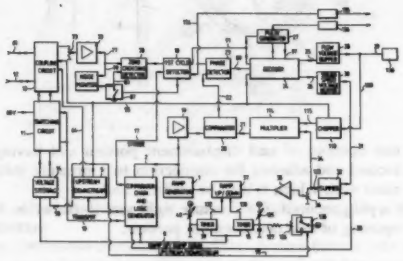
FLUID FLOW MONITORING

Rodney C. Johnson, Burgess Hill, England, assignor to Bestobell Sparling Limited, Sussex, England

Filed Nov. 22, 1983, Ser. No. 554,192
Claims priority, application United Kingdom, Nov. 30, 1982, 8234110
Int. Cl.⁴ G01F *1/66*
U.S. Cl. 73—861.28 **9 Claims**

1. A method of monitoring fluid flow comprising causing acoustic signals to be transmitted through said fluid in opposite

first and second directions with components in the direction of flow, successive ones of the said acoustic signals being transmitted alternately in said first and second directions through said fluid, and initiating in correspondence with each said acoustic signal a changing control function the rate of change of which represents acoustic velocity in said fluid; receiving said transmitted acoustic signals; generating a signal representing fluid flow velocity; comparing said control function with said signal representing fluid flow velocity to generate expected arrival times for said transmitted acoustic signals, repre-



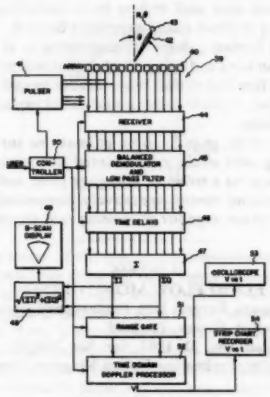
sented by times at which said control function reaches a threshold; comparing said expected arrival times with the actual arrival times of said transmitted acoustic signals, and storing the results of said comparisons; and comparing said stored results from two successive acoustic signal transmissions either to modify the rate of change of said control function if both said acoustic signals arrived earlier or later than their respective expected arrival times, or to modify said signal representing fluid flow velocity if one acoustic signal arrived before and the other after their expected arrival times.

4,542,657

TIME DOMAIN TECHNIQUE TO DETERMINE MEAN FREQUENCY

William D. Barber, Ballston Lake; Jeffrey W. Eberhard, Schenectady, and Steven G. Karr, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 26, 1983, Ser. No. 526,856
Int. Cl.[4] G01F *1/66*
U.S. Cl. 73—861.25 **13 Claims**



7. An ultrasonic system for measuring the velocity of blood and similar liquids comprising:

means for transmitting pulses of ultrasound that insonify a chosen sample volume and for receiving echoes;

means for coherently demodulating echo signals to baseband using phase quadrature emission frequency references and focusing and summing to produce in-phase and quadrature time varying Doppler signals;

means for simultaneously gating said Doppler signals after pulse transmissions to extract in-phase and quadrature time samples, I_i and Q_i, representing echoes backscattered from the sample volume;

means for determining the mean frequency, $\bar{\omega}$, of said time varying signal in real time at favorable and adverse signal-to-noise ratios, and thus the frequency shift, by producing delayed time samples I_{i-1} and Q_{i-1} and processing said undelayed samples I_i and Q_i and delayed samples so as to smooth and remove substantially all uncorrelated noise; and

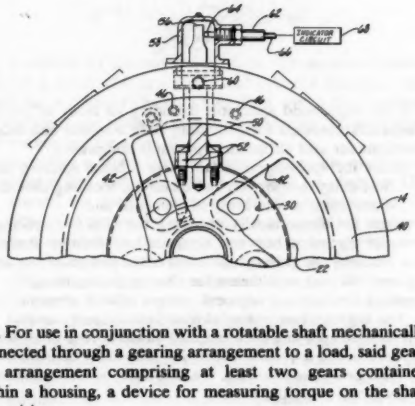
means for deriving mean blood velocity from said mean frequency and displaying velocity as a function of time.

4,542,658

TORQUE MEASURING DEVICE

Kenneth D. Allen, Mobile; James W. Brogdon, Daphne; John S. Barton, Mobile, all of Ala., and Raymond J. Hicks, Llandrindod Wells, England, assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jan. 16, 1984, Ser. No. 571,377
Int. Cl.[4] G01L *3/14*
U.S. Cl. 73—862.31 **8 Claims**



1. For use in conjunction with a rotatable shaft mechanically connected through a gearing arrangement to a load, said gearing arrangement comprising at least two gears contained within a housing, a device for measuring torque on the shaft comprising:

a hub having an axis, at least one gear from the gearing arrangement being rotatably mounted to said hub at a position spaced from said hub axis,

an annulus secured to said housing,

means for coaxially securing said annulus to said hub to permit limited rotational movement of said hub relative to said annulus in an amount proportional to the torque between said at least one gear and said housing,

means for measuring said relative movement,

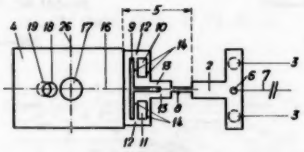
means for indicating said measured movement, and,

wherein said annulus has a larger daiameter than said hub, and wherein sai securing means comprises a plurality of spokes extending between and secured to said hub and said annulus, said spokes being circumferentially spaced from each other and tangent with respect to a circle coaxial with the axis of said hub.

4,542,659
MASS AND FORCE METER

Kaspar Saner, Dübendorf, Switzerland, assignor to Wirth Gallo Patent AG, Zurich, Switzerland

Filed Jan. 19, 1984, Ser. No. 572,146
Claims priority, application European Pat. Off., Feb. 4, 1983, 83810045.1
Int. Cl.[4] G01L 1/26
U.S. Cl. 73—862.38 3 Claims

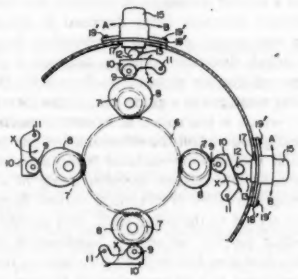


1. A mass and force meter with a frame, a reference mass, and force transmission means, said transmission means transmitting the weight of said reference mass, a two-arm lever pivotally mounted in said frame around a horizontal axis, resilient guiding means having a reset force connecting said reference mass to said two-arm lever and guiding it parallelly and horizontally, said guiding means having two parts, the first part comprising a flat spring fitted vertically at one end into said two-arm lever and at the second part comprising at least one outer, rigid arm and at least one inner rigid arm, said outer and inner arms being parallel, resilient, flat guides, the other end of said flat spring being fitted to said inner, rigid arm.

4,542,660
CAM-TYPE HYDRAULIC DRIVING DEVICE

Hisanori Kato, and Masao Okawa, both of Niihama, Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 409,976
Claims priority, application Japan, Aug. 28, 1981, 56-134290
Int. Cl.[4] F01B 1/06, 13/06; F16H 21/50, 37/06
U.S. Cl. 74—27 2 Claims

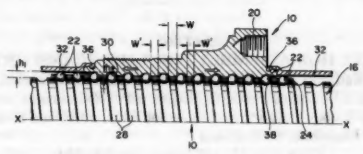


1. A cam-type hydraulic driving device, comprising:
a frame provided with a chamber surrounded by a vertically extended wall;
a plurality of cams disposed within said chamber and in circular arrangement in a common horizontal plane, each of said cams being rotatable about a vertical axis;
a plurality of hydraulic cylinders disposed in circular arrangement concentrically surrounding said circular arrangement of cams, each of said cylinders having at least one variable chamber defined by a reciprocating plunger driven by a corresponding one of said cams and hydraulically connected to a hydraulic actuator and being fixed to said wall such that said plunger is directed radially;
a driving means for driving said cams; and
a roller lever pivotally supported at its one end in said chamber and carrying at its other end a roller in rolling contact with each said cam to be swung in accordance with rotation of said cam thereby to impart reciprocating movements of a predetermined stroke to each said plunger, and wherein each said cylinder is displaceable in the circumferential direction along said wall to change its position relative to said roller lever associated therewith thereby to change the stroke of the plunger.

4,542,661
ROTARY-TO-LINEAR CONVERTER WITH ROLLING BALLS, AND TWO-SPEED FEED MECHANISM INCORPORATING THE SAME

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,254
Claims priority, application Japan, Dec. 4, 1981, 56-195356; Dec. 24, 1981, 56-216206; Dec. 24, 1981, 56-216207
Int. Cl.[4] F16H 1/18, 1/20, 55/18, 27/02
U.S. Cl. 74—424.8 NA 15 Claims



1. A rotary-to-linear converter comprising:
(a) a worm having an external screw thread;
(b) a ball nut having an internal screw thread and sleeved upon the worm;
(c) a plurality of antifriction balls rollably interposed between the worm and the ball nut to cause relative longitudinal displacement of either in response to the rotation of the other;
(d) at least one turn of the internal thread at the midportion of the ball nut being different in width from the other turns of the internal thread whereby the antifriction balls on the opposite sides of the different-width turn of the thread are preloaded in the opposite axial directions of the worm and the ball nut to eliminate backlash therebetween; and
(e) a cage for rollably holding the balls in preassigned relative positions.

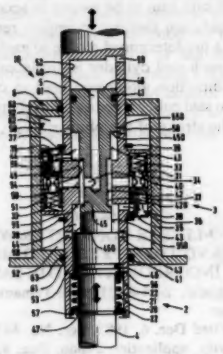
4,542,662
MECHANICAL GEAR SELECTOR

Gerold Bieber, Langenargen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 18, 1982, Ser. No. 442,800
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147003
Int. Cl.[4] G05G 7/04
U.S. Cl. 74—470 12 Claims

1. A gear selector for a synchronized gear transmission change comprising a mechanical gear change mechanism and a hydrostatic device, said device including an input means adapted to receive a gear change force, an output means to apply a gear change force to said gear change mechanism, a force amplifying means operable to couple said input means to said output means to increase said gear change force received

by said input means without supply of exterior pressure, and a resilient element disposed between the input means and output



means for controlling the threshold gear change force at which said force amplifying means becomes operable.

4,542,663

REEL HUB ASSEMBLY FOR TAPE TRANSPORT

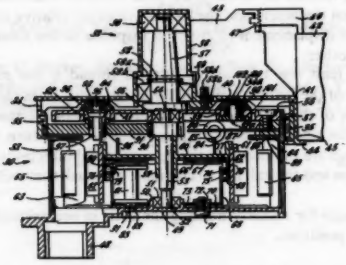
Stefan Kudelski, Le Mont-sur-Lausanne; Ernest Rosselet, Assens, and Eberhard Pertz, Epalinges, all of Switzerland, assignors to Ampex Corporation, Redwood City, Calif. and Kudelski S.A., Lausanne, Switzerland

Filed Sep. 15, 1983, Ser. No. 533,094

Claims priority, application United Kingdom, Sep. 17, 1982, 8226571

Int. Cl.⁴ F16H *1/28, 3/44*

U.S. Cl. 74—801 **5 Claims**



1. A motor driven hub assembly for holding and rotating a tape reel, comprising:

a housing;

a rotary hub which is adapted for holding a reel of tape, the hub including a driving annulus;

a motor;

a sun wheel connected to be driven by the motor;

a plurality of planet wheels evenly spaced around the sun wheel, each such planet wheel being positioned for driving engagement with the sun wheel and said annulus;

a carrier for said planet wheels; and

a support for said carrier, said support incuding at least two restraining devices, permitting restricted movement of the carrier radially and circumferentially of said sun wheel, each restraining device comprising means defining an aperture, a spigot extending into said aperture and a resilient ring encircling said spigot and disposed within said aperture.

4,542,664

GEAR TRANSMISSION

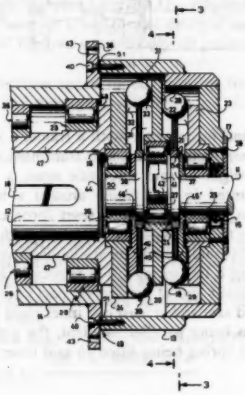
Zdenek Sladek, Brno; Frantisék Musil, Blansko; Ladislav Podmela, and Miloslav Bursa, both of Brno, all of Czechoslovakia, assignors to Prvi brnenska strojirna, koncernovy podnik, Brno, Czechoslovakia

Filed Mar. 31, 1983, Ser. No. 480,685

Claims priority, application Czechoslovakia, Nov. 24, 1980, 8049-80

Int. Cl.⁴ F16H *1/28*

U.S. Cl. 74—804 **5 Claims**



1. A face gear equipment comprising a rotatable drive shaft for driving the equipment, and a rotatable driven shaft driven by the equipment, at least two serially connected rolling face gear units, a first, inlet face gear unit having a first transmission member and a second transmission member, the first and second transmission members being disposed in spaced parallel relationship and having on their confronting faces transfer grooves in which there are rollingly disposed a plurality of angularly spaced transfer elements such as balls, the transfer elements being arranged in a guide gear in the form of a plate-like member which is journalled in its central portion upon a first eccentric guide pin on the drive shaft of the gear equipment, the first transmission member being a fixed mounted plate, the second transmission member being of a plate-like form and being journalled in its central portion upon a second eccentric connected to the drive shaft, said second eccentric being a guiding pin for the second transmission member, a second rolling face gear unit including the second transmission member functioning as a driving element thereof and a third transmission member in the form of a plate-like member disposed in spaced relationship with respect to the second transmission member, the confronting faces of the second being provided with face transfer grooves in which there are rollingly disposed a second set of angularly spaced transfer members in the form of balls, the second set of transfer members being held in angularly spaced relationship by a second guide gear in the form of a third plate disposed between the second and third transmission members, a second eccentric stabilizing pin which is drivingly connected to the drive shaft of the gear equipment, the second guide gear being journalled adjacent its center portion upon the second eccentric stabilizing pin, the third transmission member being drivingly connected with the rotatable driven shaft driven by the equipment.

4,542,665

CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE TRANSMISSION WITH SPACE SAVING AUTOMATIC CLUTCH CONTROL

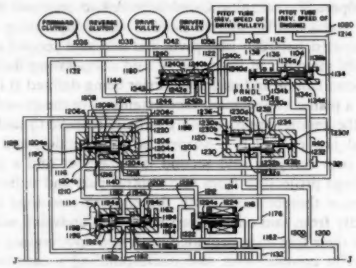
Sigeaki Yamamuro, Zushi; Haruyoshi Kumura; Yoshikazu Tanaka, both of Yokohama; Keiju Abo, and Hiroyuki Hirano, both of Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

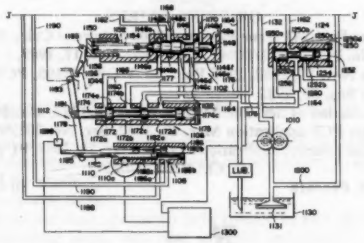
Filed Oct. 20, 1983, Ser. No. 543,840

Claims priority, application Japan, Oct. 22, 1982, 57-184629; Sep. 9, 1983, 58-165266

Int. Cl.[4] B60K *41/12, 41/18, 41/10*

U.S. Cl. 74—866 **10 Claims**





1. A control system for a hydraulic automatic clutch of a continuously variable transmission which is shiftable into any reduction ratio between the largest reduction ratio and the smallest reduction ratio, the control system comprising:

a source of pressurized fluid;

a shift control valve communicating with said source and having a spool movable for controlling a shift between reduction ratios in the continuously variable transmission;

a shift operating mechanism including a rod movable within a first range and a second range,

said shift operating mechanism including means operatively connected with said rod and said spool for controlling said spool of said shift control valve so as to continuously vary a reduction ratio between the largest reduction ratio and the smallest reduction ratio in response to movement of said rod within said first range;

control means for actuating said rod;

a starting valve having a start fluid pressure regulating state and a complete engagement fluid pressure regulating state, said starting valve supplying to the hydraulic automatic clutch a first regulated fluid pressure when it is in said start fluid pressure regulating state, said starting valve supplying a second regulated fluid pressure when it is in said complete engagement fluid pressure regulating state; and

means operatively connected with said rod for rendering said starting valve operable in said start fluid pressure regulating state when said rod is disposed within said second range and for rendering said starting valve operable in said complete engagement fluid pressure regulating state when said rod is disposed in said first range.

4,542,666

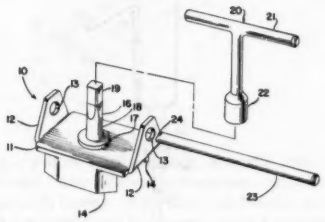
ANGLE STOP VALVE WRENCH

Don H. White, 2873 W. Keys La., Anaheim, Calif. 92804

Filed Sep. 1, 1983, Ser. No. 528,592

Int. Cl.[4] B25B *13/00*

U.S. Cl. 81—176.1 **11 Claims**



6. A wrench for applying torque to the handles of valves of the type having a stem depending perpendicularly downward from the handle of said valve comprising:

a. a base plate having essentially flat and parallel upper and lower surfaces,

b. a plurality of elongated flanges extending perpendicularly downward from said lower surface of said base plate, said flanges having essentially flat, vertically disposed inwardly facing surfaces describing an opening having a transverse cross-sectional shape at least partially conformable over the outer surface of said valve handle,

c. an elongated cylindrical post extending perpendicularly upward from the center of said upper surface of said base plate, said post having a longitudinal center line disposed perpendicularly to said upper surface of said base plate, a lower portion of said post having a circular external transverse cross-sectional shape, and an upper portion of said post having a polygonal transverse cross-sectional shape adapted to locking engagement by an external wrench,

d. at least one pair of opposed vertically disposed tabs extending perpendicularly upward from opposite edges of said base plate, each said tab having a hole coaxial with a line parallel to said base plate and intersecting said longitudinal center line of said post, and

e. an elongated cylindrical bar adapted to insertion through said hole in one of said tabs, at least one end of said bar having an arcuate cross-section groove complementary to said circular external transverse cross-section of the lower portion of said post, whereby said grooved end of said bar may be inserted through said hole in said tab and lockably engage said post.

4,542,667

TOOL HANDLE

Young H. Jang, San Francisco Calle 72, Casa 38, Panama City, Panama

Filed Mar. 12, 1984, Ser. No. 588,220

Int. Cl.[4] B25B *13/00*

U.S. Cl. 81—177.2 **6 Claims**

1. A tool handle for applying a twisting or torque loads to a tool, the combination comprising:

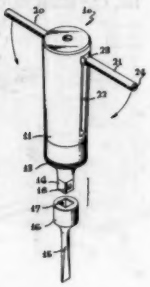
an elongated rounded body having opposite ends;

a pair of elongated grip members pivotally carried adjacent one end of said body adapted to be deployed between a storage position substantially parallel to the longitudinal axis of said body and an operative position outwardly and laterally extending from opposite sides of said body;

biasing means operably carried on said body for applying a

yieldable pressure or load on said grip members constituting an over-the-center toggle mechanism so as to bias said grip members in either said storage position or said operated position;

load transference means interconnecting said grip members with said body for transferring torque load forces therebetween;



said load transference means includes an elongated rod coaxially disposed along the central longitudinal axis of said body terminating in a cross bar having a yoke provided in the opposite ends of said cross bar;

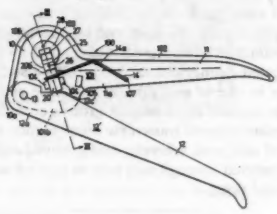
each of said grip members is pivotally coupled to each of said cross bar yokes respectively so that each of said grip members move between said storage and said operative positions.

4,542,668

PLIERS-TYPE PRESSING TOOL

Hans Wiener, Täby, and Hans Undin, Akersberga, both of Sweden, assignors to C. A. Weidmüller GmbH & Co., Fed. Rep. of Germany

Filed Sep. 7, 1983, Ser. No. 529,968
Claims priority, application Sweden, Sep. 9, 1982, 8205127
Int. Cl.[4] B25B 7/12
U.S. Cl. 81—355 **13 Claims**



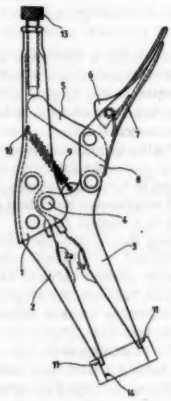
1. A pressing tool of the pliers-type comprising, in combination, a body member having a first end and a second end with the first end and second ends disposed in spaced relation on a longitudinal axis of said body member; a first elongated handle rigidly connected to said second end of said body member and extending outwardly therefrom generally as an extension of said longitudinal axis said first handle having a first end connected to the second end of said body member and a second end spaced from the first end thereof; a rectilinear guiding track on said body member having a first end and a second end disposed in spaced relation on an axis of said guiding track and the axis of said guiding track is disposed transversely of the longitudinal axis of said body member; a stationary first jaw member situated at said first end of said track; a jaw carrier reciprocally mounted in said track for movement toward and away from said first jaw member; a second jaw member mounted on said jaw carrier for movement therewith; a second elongated handle; a pivot pin located on said body member between the first end of said body member and the axis of said guiding track; said second handle being pivotally mounted on said pivot pin and having a first end located adjacent the first end of said body member and a second end spaced from the first end thereof, said second handle being pivotally displaceable between an open position and a closed position with the second ends of said first handle and second handle being spaced further apart in the open position than in the closed position; and cooperating means on said second handle and said jaw carrier for the transmission of movement and force from said second handle to said jaw carrier when said second handle is pivoted from the open position to the closed position, said cooperating means situated adjacent to said axis of said guiding track and on second handle, said cooperating means being located between said pivot pin and said second end of said body member, at least one of said cooperating means on said second handle and said jaw carrier being defined at least in part by a planar engagement face extending in the closed position of the handles approximately radially relative to said pivot pin; said jaw carrier is U-shaped in cross-section and has a central part carrying said second jaw member and a pair of spaced legs projecting from said central part and defining an open space therebetween with the ends of said legs spaced outwardly from said central part being free ends and said legs being at their free ends provided with said cooperating means disposed in contact with said corresponding means on said second handle.

4,542,669

GRIPPING PLIERS

Philippe Roux, 41 B rue Pasteur, 69300 Caluire et Cuire, France

PCT No. PCT/FR82/00047, § 371 Date Nov. 17, 1982, § 102(e) Date Nov. 17, 1982, PCT Pub. No. WO82/03195, PCT Pub. Date Sep. 30, 1982
Continuation of Ser. No. 445,368, Nov. 17, 1982, abandoned.
This PCT application Mar. 17, 1982, Ser. No. 701,668
Claims priority, application France, Mar. 18, 1981, 81 105689
Int. Cl.[4] B25B 7/02
U.S. Cl. 81—418 **10 Claims**



1. Vice pliers having jaws with ends adapted to grip the interior of hollow articles comprising:

a principal lever which is integral with a first fixed jaw having a notched exterior surface at its front end;

a second jaw having a notched exterior surface at its front end, said second jaw being pivotably connected to said principal lever at a first point, and linked to said principal

lever at a second point by means of an elbow joint, said elbow joint forming an auxiliary lever for handling said pliers and a device for locking said first jaw and said second jaw in a gripping position;

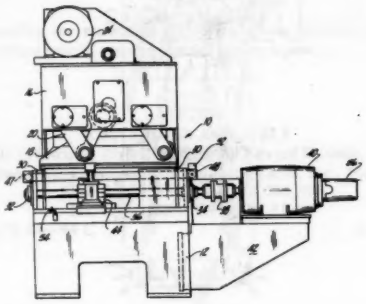
a spring connected to said principal lever and said second jaw, said spring exercising a force in order to space said second jaw away from said first jaw so that the notched exterior surfaces of the front end of the jaws are allowed to engage and grip a hollow article into which the jaws are inserted.

4,542,670

CUTOFF DIE SET SEAT ACCELERATOR USING ROTARY TO LINEAR MOTION CONVERTER

John J. Borzym, 4820 Schoolbell, Birmingham, Mich. 48010

Filed May 27, 1983, Ser. No. 498,982
Int. Cl.⁴ B23D *25/06, 21/00*
U.S. Cl. 83—295 **11 Claims**



1. An operator for linearly moving product such as tubing comprising:

a base having a bed; a die mechanism mounted on the bed for bidirectional travel along a path corresponding to the path of the product;

a reversable motor;

a threadless shaft connected to be rotated by said motor and extending along said base adjacent and parallel to the product path;

a traveler mounted on and drivingly connected to said shaft so as to travel linearly therealong as said shaft is rotated and mechanically connected to the die mechanism to drive the die mechanism along the product path;

means operative to allow slip in the driving connection between said traveler and said shaft in response to an overload condition associated with the die mechanism;

means for generating a signal represeting the absolute longitudinal position of said traveler relative to said bed; and

control means operative to control the rotation of said motor in response to said signal.

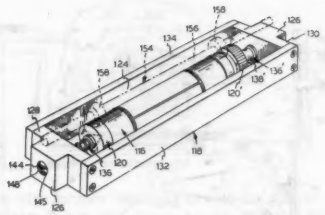
4,542,671

ASSEMBLY FOR ROTARY DIE CUTTING UTILIZING A SHAFTLESS ROLL

Martin Kesten, West Hartford, Conn., assignor to Preston Engravers, Inc., Windsor, Conn.

Division of Ser. No. 260,898, May 6, 1981, Pat. No. 4,452,116.
This application May 21, 1984, Ser. No. 612,592
Int. Cl.⁴ B23D *25/12;* B26D *1/40*
U.S. Cl. 83—343 **8 Claims**

1. In a die-cutting press, a roll assembly comprising: a substantially solid shaftless die-cutting roll having at least one cutting element on its outer cylindrical surface, having a gear portion on one end thereof, and having means adjacent each of its opposite ends for rotating engagement of securing means therewith, said engagement means defining a recess extending axially inwardly from each of the opposite ends of said roll; and a highly rigid support member adapted for fixed mounting adjacent said roll and comprising a frame extending thereabout, said frame having securing means affixed therein for engagement with said engagement means of said roll, and



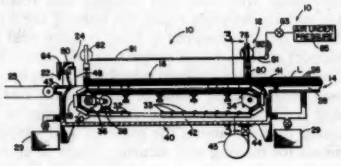
comprising a pair of axially aligned, inwardly directed rods mounted in said frame adjacent said opposite ends of said roll, each of said rods having on its inner end bearing portion dimensioned and configured to engage within a corresponding one of said end recesses to thereby journal said roll within said frame and cooperatively provide stability in the press.

4,542,672

SHEET MATERIAL CONVEYOR LOADING APPARATUS

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Dec. 2, 1983, Ser. No. 557,541
Int. Cl.⁴ D06H *7/00*
U.S. Cl. 83—409 **14 Claims**



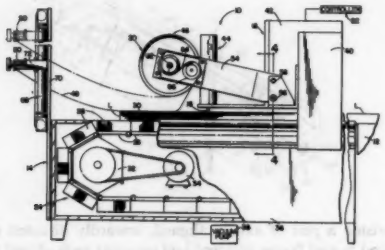
1. A machine for working on sheet material and comprising conveying means for advancing sheet material received from a spreading table and including an elongated conveyor defining a longitudinally extending movable sheet material support surface, and conveyor loading means for releasably securing sheet material to the support surface to move with the support surface and from the spreading table onto said support surface, said conveyor loading means including a clamping carriage, means for supporting said clamping carriage for free longitudinal directional movement relative to said conveyor, a clamping element carried by said clamping carriage, means for moving said clamping element toward said support surface and to clamped position wherein said clamping element is engageable with sheet material on said support surface to clamp the sheet material to said support surface and couple said clamping carriage to said support surface to move with said support surface and to a released position wherein said clamping element is out of engagement with the sheet material and said clamping carriage is uncoupled from said conveyor, said clamping carriage being advanced by and with said conveyor from a retracted position to an advanced position when said clamping element is in its clamping position, and biasing means for urging said clamping carriage toward its retracted position when said clamping element is in said released position, said biasing means being formed by a part of said means for moving said clamping element.

4,542,673

APPARATUS FOR SEALING CUT SHEET MATERIAL

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Jul. 3, 1984, Ser. No. 627,400
Int. Cl.[4] D06H 7/00
U.S. Cl. 83—422 7 Claims



1. An automatically controlled cutting machine for cutting layups of limp sheet material comprising a cutting table defining a support surface on which a layup of limp sheet material is spread for cutting, vacuum generating means for producing vacuum at said support surface to compress the layup and hold it in firmly fixed position on the support surface, a tool carriage supported for movement in one and an opposite direction longitudinally of said cutting table, a cutting instrument supported on the tool carriage for movement with the carriage in cutting engagement with a layup spread on the support surface, a retractable roll of air-impermeable overlay material, means for supporting said roll on said tool carriage with the axis of said roll extending transversely of said support surface for movement with said tool carriage and relative to said support surface, securing means for holding the free end portion of said overlay material in fixed position near one end of said support surface, means supporting said securing means for movement between a lowered position wherein said free end is disposed proximate the plane of said support surface and an elevated position wherein said securing means is disposed a substantial distance above the plane of said support surface, and means for moving said securing means to and selectively maintaining said securing means in its lowered position and in its elevated position.

4,542,674

ALIGNMENT DEVICE AND DIE ADJUSTMENT APPARATUS FOR PUNCH PRESSES AND THE LIKE

RB Omo, Jr., Bath, Me., assignor to Bath Iron Works Corporation, Bath, Me.

Filed Aug. 3, 1983, Ser. No. 520,011
Int. Cl.[4] B26F 1/02
U.S. Cl. 83—527 22 Claims

1. An alignment mechanism for punch presses and the like, comprising:

(a) a base having an upper support surface;

(b) said upper support surface having a plurality of load oriented spaced shaped recesses;

(c) a base alignment sleeve positioned in each of said recesses and conforming thereto and extending upwardly above said upper support surface;

(d) a frame positioned on said upper support surface and having a portion extending upwardly therefrom;

(e) said frame having a first set of a plurality of load oriented spaced shaped recesses cooperating with said plurality of base recesses and adapted for receiving said alignment sleeves in said first set of recesses and for thereby aligning said frame with said base;

(f) said upwardly extending portion of said frame having an uppermost surface;

(g) said uppermost surface having a second set of a plurality of load oriented spaced shaped recesses;

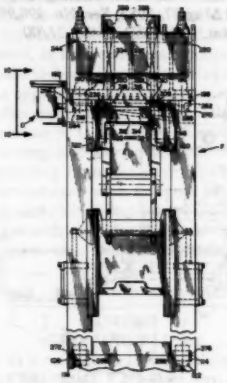
(h) a crown alignment sleeve positioned in each recess of said second set of recesses and conforming thereto and extending upwardly above said uppermost surface;

(i) a crown positioned on and secured to said uppermost surface;

(j) said crown having a plurality of load oriented spaced shaped recesses cooperating with said second set of recesses and adapted for receiving said alignment sleeves of said second set of recesses in said crown recesses and for thereby aligning said crown with said frame;

(k) said frame having an upper end and a lower end;

(l) die means associated with said lower end;



(m) longitudinally displaceable die adjustment means associated with said upper end;

(n) laterally displaceable wedge means slideably bearing on said die adjustment means for longitudinally displacing said die means when said wedge means is laterally displaced;

(o) drive means associated with said crown and connected to said wedge means for laterally displacing said wedge means;

(p) a pair of spaced parallel opposed gib means fastened to said crown adjacent said frame upper end and extending below said uppermost surface; and,

(q) said wedge means having a pair of opposed shoulders engaged with said gib means and adapted for being guided thereby during lateral displacement.

4,542,675

AUTOMATIC TEMPO SET

Robert J. Hall, Jr., 20756 Tribune St., Chatsworth, Calif. 91311; George R. Hall, 13613 Huston St., Sherman Oaks, Calif. 91423, and Jack C. Cookerly, 26916 Barbacoa Pl., Saugus, Calif. 91350

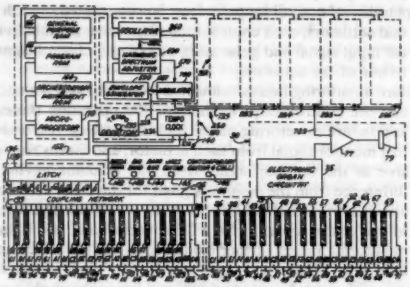
Filed Feb. 4, 1983, Ser. No. 463,125
Int. Cl.[4] G10H 1/40
U.S. Cl. 84—1.03 21 Claims

1. In a method for providing musical accompaniment in different musical styles to the playing of an instrument, upon selection of one of the styles, the improvement comprising the steps, accomplished by the instrument itself, of:

providing, in response to the selection of a musical style, a tempo rate characteristic of the style by generating a timing signal of preselected frequency, the frequency of the timing signal being a preselected multiple of the characteristic tempo rate and at least twelve times said tempo rate;

providing an accompaniment comprising a plurality of musi-

cal notes in dynamic response to the playing of the instrument; and



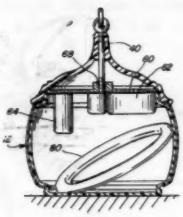
sounding the musical notes of the accompaniment at said tempo rate in response to the timing signal.

4,542,676

ORNAMENT ASSEMBLY

Ronald L. Carlson, Riverside, Mo., and Edward G. Seale, Prairie Village, Kans., assignors to Hallmark Cards, Inc., Mo.

Filed Jun. 8, 1982, Ser. No. 386,390
Int. Cl.⁴ G10F *1/06*; A47G *33/08*
U.S. Cl. 84—94 C **2 Claims**



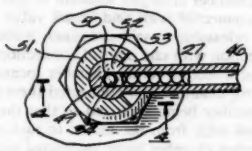
1. In combination: a suspendable ornament having an engageable hook receptacle at the top thereof for suspension of said ornament form above and a spring-driven music generator within said ornament, said hook receptacle being mounted for rotary motion relative to the top of said ornament and being coupled to said music generator to provide for winding and unwinding thereof, the unwinding of said music generator causing rotation of said ornament around its vertical axis, said ornament comprising a substantially hollow main body element with an upwardly extending opening and a separate top element adapted to cover said opening by snap engagement therewith, said music generator being enclosed and secured by the engagement of said main body element by said top element and being mounted on a horizontally disposed surface secured at its periphery between the main body and top elements of said ornament, and a shaft extending vertically from said music generator through the center of said top element to provide for manual winding of said music generator from the outside of said ornament, said main body element having a flange area formed around the lower end thereof, and said combination further comprising a decorative bottom element with means for engaging said flange area to secure the bottom element to the main body, said engaging means being releaseable to allow separation of the bottom element from the main body and the lower end of said main body being substantially flat to allow said ornament to stand on its own.

4,542,677

CARTRIDGE PRIMER FEEDER

Richard J. Lee, 3146 Kettle Moraine Rd., Hartford, Wis. 53027

Filed Jun. 21, 1984, Ser. No. 622,966
Int. Cl.⁴ F42B *33/10*
U.S. Cl. 86—38 **10 Claims**



1. A cartridge primer insertion device for use in a press including a ram that is movable in axially opposite directions and a holder for retaining a cartridge while a primer is being inserted, said device comprising:

a trough defining a curved passageway having an upper end into which a series of primers are fed to the passageway and a lower end at which the first in the series of primers exits from the passageway while moving along a horizontal line under the gravitational force exerted by primers above said first primer in the series,

an element joined with said trough at said lower end of the passageway, said element having a hole whose axis is perpendicular to said horizontal line and whose width is sufficient to accommodate the width of only one primer, said hole having an open side contiguous with said lower end of said passageway such that when said first primer exits the passageway said primer arrives directly and centrally in said hole, and

a punch member arranged coaxially with said hole and movable through said hole and spring means arranged for retracting said punch member to a position where its nominally upper end is no higher than said lower end of the passageway to thereby enable a primer that has exited from the passageway to be deposited directly on said upper end,

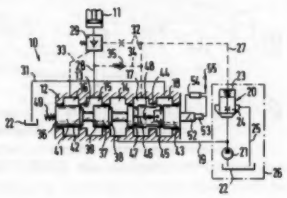
said punch being driven in one direction in response to movement of said ram in one direction to thereby insert said primer on the end of the punch in said cartridge retained in said holder.

4,542,678

CONTROL ARRANGEMENT FOR HYDRAULIC MOTOR

Heinrich Kochendörfer, Kernen; Heinrich Lödige, Vaihingen; Hubert Mohaupt, Bietigheim; Roland Schempp, Vaihingen; Werner Schumacher, Asperg, and Raimund Skambraks, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,984
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206842
Int. Cl.⁴ F15B *11/08, 13/044*
U.S. Cl. 91—6 **9 Claims**



1. A control arrangement, comprising

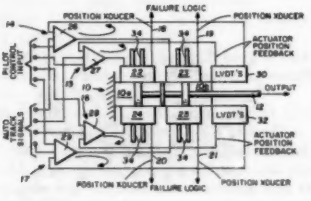
a hydraulic motor;
adjustable pressure medium supply means including a container and having an outlet;
an unblockable check valve having a control connection;
means forming a plurality of chambers including a supply chamber connected with said outlet of said supply means, a motor chamber arranged adjacent to said supply chamber and connected with said check valve, a first return chamber releasable in said container, a control chamber for connection with said control connection of said check valve, and a second return chamber located adjacent to said control chamber and connected therewith, said first return chamber being arranged so that the pressure medium flows back from the motor to said container, said second return chamber being associated only with a control flow of said check valve and said supply means;
means for connecting said control chamber with said control connection of said check valve,
means for connecting said second return chamber with said control chamber;
a control conduit extending from said supply means and leading to said control chamber;
a control slider displaceable relative to said chambers so that during raising of said control slider it controls the pressure medium from said supply means via said check valve to the motor and during lowering of said control slider it releases the same to said container, said control slider controlling the connection between said control chamber and said second return chamber;
a first pressure controlling member arranged on said control slider in the region of said control chamber and said second return chamber so that in a lowered position of said control slider said first pressure controlling member is located between said control chamber and said second return chamber and blocks communication between said control chamber and said second return chamber around said control slider so that the pressure medium flows through said first pressure controlling member and produces a sufficiently high unblocking pressure for said check valve, said control slider in its raised position includes means blocking the communication between said control chamber and said second return chamber both around said control slider and through said first pressure controlling member, and said control slider in a neutral position includes means allowing direct communication between said control chamber and said second return chamber; and
a second pressure controlling member communicating said control chamber and said motor chamber and opening to the latter.

4,542,679

MULTIPLE LOOP CONTROL SYSTEM

Milford R. Murphy, Arlington, and Delbert E. Haskins, Irving, both of Tex., assignors to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 234,713, Feb. 17, 1981, Pat. No. 4,436,018. This application Dec. 15, 1983, Ser. No. 562,068
Int. Cl.[4] F15B *9/03, 9/09*
U.S. Cl. 91—363 A **16 Claims**



1. A multiple loop control system providing a single composite output, comprising:
a plurality of actuators, each actuator receiving at least two separate control signals and generating an output interconnected with the output of all other actuators in the plurality to provide a single composite output;
a plurality of control loops, at least one connected to each of said actuators, each control loop responsive to an individual input signal and generating one of said control signals to one of the actuators;
failure monitoring means connected to each of said actuators and the control loops to monitor the operation thereof, said failure monitoring means including means responsive to a monitor signal from each actuator, and means responsive to the monitor signal from one actuator having a difference from the monitor signals for the other actuators above a first threshold level to generate a disengage signal to one of the actuators for a failure condition, said failure monitoring means further including means for detecting a hard-type failure and inert-type failure and means for generating the disengage signal at a lower threshold level for an inert-type failure than for a hard-type failure; and
said failure monitoring means further including means connected to each of said plurality of control loops for isolating each of said plurality of control loops from each other.

4,542,680

VACUUM BOOSTER DEVICE

Hiroo Takeuchi, Asashina, Japan, assignor to Nissan Kogyo Kabushiki Kaisha, Ueda, Japan

Filed Feb. 11, 1982, Ser. No. 348,109
Claims priority, application Japan, Jul. 1, 1981, 56-103750
Int. Cl.[4] F15B *9/10*
U.S. Cl. 91—369 A **8 Claims**

1. A vacuum booster device comprising:
a booster shell;
a booster piston axially slidably accommodated in said booster shell and having a disc portion;
a diaphragm having an inner circumferential bead coupled to an inner circumferential end of said disc portion of said booster piston, an outer circumferential bead coupled to the circumferential wall of said booster shell and an intermediate portion extending between said inner and outer circumferential beads, said intermediate portion being separably superposed on the rear surface of the disc portion;
said booster piston and said diaphragm together dividing the interior of said booster shell into a front side first working chamber in communication with a vacuum supply source and a rear side second working chamber selectively in communication with said first working chamber or to the atmosphere via a control valve operatively connected to an input member;
tie rods extending through said booster piston and said intermediate portion of the diaphragm connecting front and rear walls of said booster shell with each other;
said booster piston and diaphragm having through-holes through which said tie rods penetrate, said diaphragm including an annular peripheral portion surrounding each through-hole;
seal means disposed in said through-holes in said booster

piston for air-tight sealing of the space formed between said booster piston and said tie rods;

and an elastic member resiliently biasing the annular peripheral portion around each through-hole provided in said diaphragm towards said disc portion of said booster piston, said diaphragm being at at least said intermediate portion normally placed in initmate contact with the rear surface of said disc portion of said booster piston due to the pressure difference between said first and second working chambers and by said elastic member, and when the internal pressure of said first working chamber becomes greater than that of said second working chamber, said diaphragm being separated from said disc portion to define a gap therebetween and simultaneously moving the peripheral portion around said through-hole thereof away from said disc portion against the resiliency of said elastic member, thereby providing communication between said first and second working chambers via the gap between said diaphragm and said disc portion and via said through-hole;

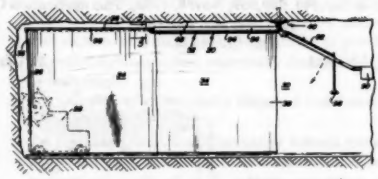
said device further comprising an anchor ring securing said inner circumferential bead of said diaphragm against a central boss portion of said booster piston, said elastic member comprising an elastic push plate integrally formed with said anchor ring, said booster piston being provided with a locating groove on the outer circumference of said central boss portion thereof, said anchor ring including a locating pawl engaging said locating groove.

4,542,681

MINE VENTILATION LINE CURTAIN EXTENDER

David W. Milam, Rte. 1, Box 160-A, Fayetteville, W. Va. 25840

Filed Aug. 15, 1984, Ser. No. 641,374
Int. Cl.[4] F17C *7/02*
U.S. Cl. 98—50 9 Claims



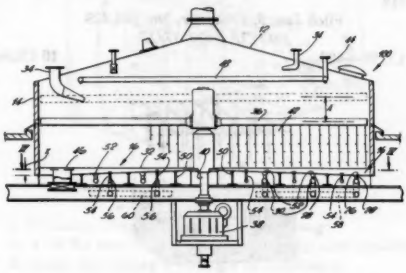
1. A mine ventilating line curtain extender for use in a mine tunnel having a working face and a line ventilating curtain terminating adjacent the permanent roof support closest to the working face, said extender comprising an elongated support structure, a line curtain extension suspended from said support structure generally in alignment with and forming an extension of the line ventilating curtain, means detachably, pivotally and swingably supporting the support structure adjacent one end thereof from the permanent roof support closest to the working face of the mine with the other end of the support structure extending in cantilever fashion toward the working face of the mine, said support structure including a pair of telescopic members with one of said members being supported from the permanent roof support and the other of said members being longitudinally extendable in relation to the supported member, said support structure including means adjacent the supported end thereof to extend the extendable member and the line curtain extension thereon and means adjacent the supported end thereof to retain the telescopic members adjacent the mine roof to enable the line curtain extension to be moved toward the working face and swung horizontally in the tunnel to optimum position in relation to the working face of the mine by an operator without the operator occupying the area between the permanent roof support closest to the working face and the working face of the mine.

4,542,682

LAUTER TUNS

John C. Hancock, Willington, England, assignor to Robert Morton DG Limited, Staffordshire, England

Filed Jul. 17, 1984, Ser. No. 631,576
Claims priority, application United Kingdom, Aug. 9, 1983, 8321445
Int. Cl.[4] C12H *1/00*
U.S. Cl. 99—277.1 8 Claims



1. A lauter tun comprising

a circumferential side wall,

a bottom wall connected to said side wall, said bottom wall comprising two flat plates connected together at a ridge, each of said flat plates sloping downwardly from said ridge to said side wall, and each of said flat plates presenting a lowest point for that portion of said bottom wall defined by said plate with that lowest point being positioned at the inside periphery of said side wall, and

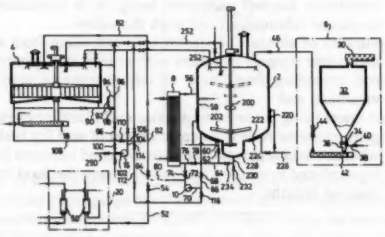
a wort collection outlet connected with each of said flat plates, each outlet being connected with its respective flat plate adjacent the lowest point defined by that flat plate at the inside periphery of said side wall.

4,542,683

BREWING APPARATUS

Noel R. Wilkinson, Burton-upon-Trent, England, assignor to Robert Morton DG Limited, England

Filed Nov. 29, 1983, Ser. No. 555,943
Claims priority, application United Kingdom, Feb. 3, 1983, 8302974; Dec. 7, 1983, 8234876
Int. Cl.[4] C12G *3/04*
U.S. Cl. 99—277.2 15 Claims



1. Brewing apparatus comprising

an at least part cylindrical vessel,

mash agitation means within said vessel,

means for raising the temperature of the vessel contents comprising an external through flow wort boiler, and

means for causing a rapid circulation of the contents of said vessel by whirling the contents, said circulation means comprising

a tangential input located in a cylindrical side of said vessel, said wort boiler being connected to said tangential input, and

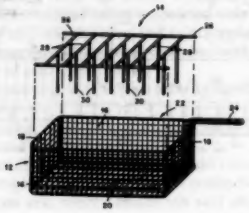
a pump provided to pump the contents through said boiler and input.

4,542,684

FRY BASKET AND SEPARATOR INSERT SYSTEM

David D. Cantrell, 4304 McCampbell La., Knoxville, Tenn. 37918

Filed Jan. 5, 1984, Ser. No. 568,429
Int. Cl.[4] A47J 37/12
U.S. Cl. 99—403 10 Claims



1. A fry basket and separator insert system for use in frying food items in oil while maintaining the food items in a separated condition, comprising:

a fry basket constructed of wire, said fry basket having a bottom wall, two side walls, two end walls and an open top, said side walls defining the length of said fry basket, said end walls defining the width of said fry basket and the depth of said fry basket being defined by the distance from said bottom wall to the distal upper edges of said end and side walls, at least one of said walls being constructed of wire formed into a pattern with openings of a sufficiently large size to allow rapid egress and ingress of hot oil and of a sufficiently small size to prevent the foot items from passing through the openings; and

an insert dimensioned to fit at least partially within the fry basket and being removably disposed at least partially within the fry basket to maintain food items in said fry basket in a separated condition, said insert comprising:

at least one elongate longitudinal support member having a length of about the length of said fry basket for being disposed in a side by side parallel relationship with a side wall of said fry basket;

a plurality of elongate transverse support members extending from said longitudinal support member, said transverse support members being in a substantially co-planar relationship one with the other;

a plurality of elongate separator rods extending from said transverse support members with at least one separator rod extending from each of said transverse support members; and

said insert being oriented to dispose said plurality of elongate separator rods in a center region of said fry basket, whereby said separator rods are disposed between food items placed in said fry basket to prevent the food from sticking together.

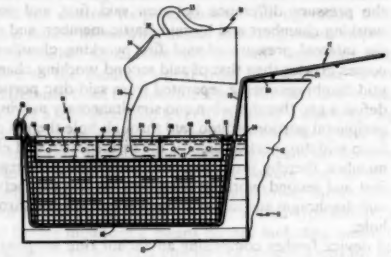
4,542,685

APPARATUS FOR MAKING FUNNEL CAKES USING A DEEP FRYER

Warren Wilson, 55 Saddle River Rd., Woodcliff Lake, N.J. 07675

Filed Jun. 30, 1983, Ser. No. 509,587
Int. Cl.[4] A47J 37/12
U.S. Cl. 99—413 6 Claims

1. Apparatus for cooking funnel cakes comprising a deep fat fryer, a pan assembly having a bottom and sides located in the fryer, the bottom having a substantially solid portion, the pan assembly being perforated so that liquid drains from the pan assembly into the fryer when the pan assembly is removed from the fryer, means for controlling the height of the bottom of the pan assembly relative to the surface of a hot liquid cooking oil bath in a vat of the fryer so that: (1) the liquid covers the bottom while top edges of the sides are above the



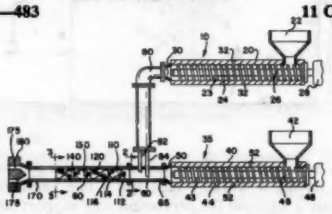
level of the liquid, and (2) the batter when continuously poured into the pan assembly hits the solid bottom portion of the pan assembly and rises in the oil to form a unitary mass that floats in the oil without sticking to the bottom and is confined by the sides as it expands, the deep fat fryer including a perforated basket having a top edge, the height controlling means including hangers on the pan assembly selectively connected to the top edge to hold the pan assembly in place on the basket.

4,542,686

METHOD AND APPARATUS FOR MAKING A MARBLED PET FOOD

Arun K. Bansal, Hanover Park, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Division of Ser. No. 549,959, Nov. 8, 1983,. This application Oct. 23, 1984, Ser. No. 663,793
Int. Cl.[4] A22C 7/00
U.S. Cl. 99—483 11 Claims



1. An apparatus for continuously making a marbled semi-most or dry pet food comprising:

(a) an elongated conduit having a substantially circular cross-section, an upstream end and a downstream end;

(b) means for advancing a red pet food stream under pressure into said upstream end of said conduit;

(c) a plurality of nozzles extending into and terminating medially within said conduit, said nozzles communicating with said conduit;

(d) means for advancing a white pet food stream into said nozzles and through said nozzles to a plurality of medial locations within said conduit;

(e) at least one stationary mixing element within said conduit and downstream from said nozzles, said mixing element having means for dividing a pet food stream into at least two pet food substreams, said element also having means for partially mixing the respective pet food substreams and said element also having means for discharging the respective pet food substreams into the conduit in a reconsolidated, in a partially mixed pet food stream;

(f) a shaping die at the downstream end of said conduit, said shaping die having discharge passages communicating with said conduit whereby the reconsolidated partially mixed pet food is expressed from the conduit; and

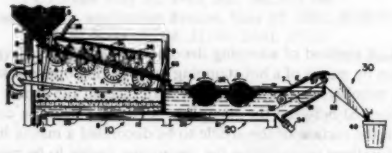
(g) means for cutting an expressed pet food into pet food pieces.

4,542,687

GREEN PEANUT DESTEMMER AND WASHER

Reaves Johnson, Smithville, Ga., assignor to RJM, Inc., Ocala, Fla.

Filed Feb. 4, 1985, Ser. No. 698,012
Int. Cl.[4] A23N *15/00*
U.S. Cl. 99—639 **8 Claims**



1. Apparatus for destemming and washing green peanuts comprising:

(a) a support structure;

(b) a destemmer section mounted on said support structure and having an input end and an output end, said destemmer section including

(i) a frame movably suspended from said support structure by a set of rocker arms,

(ii) a plate attached to said frame and sloping downward from said input end to said output end of said destemmer section, said plate having a plurality of parallel slots therethrough extending essentially from said input end to said output end,

(iii) a plurality of drive shafts disposed transverse to and below said plate,

(iv) a plurality of circular destemmer wheels mounted on and concentric with each of said drive shafts, an upper portion of each of said wheels extending upward through said slots, each of said destemmer wheels having a plurality of curved slots around the periphery thereof, and

(v) driving means for rotating said drive shafts with alternate shafts being rotated in opposite directions whereby green peanuts introduced onto said plate at said input end are destemmed and moved to said output end;

(c) an elongate washing tank mounted on said support structure and having an input end and an output end, said input end contiguous with said destemmer section output end for receiving destemmed peanuts, said tank for containing washing water;

(d) at least one cylindrical rotary brush disposed within and transverse to said washing tank having an upper portion thereof extending above the level of said washing water;

(e) means for rotating said brush wherein said upper portion thereof rotates toward said input end of said washing tank thereby washing destemmed peanuts and moving same to said output end of said tank; and

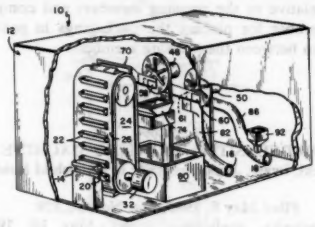
(f) conveyor means disposed at said output end of said washing tank and having an input end disposed below the level of said washing water and an output end disposed above the level of said washing water, said conveyor means for removing destemmed and washed peanuts from said washing tank for collecting and packing thereof.

4,542,688

CONTAINER DISPOSAL APPARATUS

Phillip Bohan, 127 S. Walnut St., Quincy, Mass. 02169

Filed Feb. 18, 1983, Ser. No. 467,641
Int. Cl.[4] B30B *9/32*
U.S. Cl. 100—173 **11 Claims**



1. Container disposal apparatus comprising:

A. a lift for moving a container to an elevated position;

B. means for storing a plurality of containers;

C. means forming a main chute for conveying containers along a main chute path from said elevated position to said container storage means;

D. means for receiving containers selectively diverted to it from said main chute; and

E. interrupter means co-operating with said main chute to intermittently divert into said container-receiving means containers passing along said main chute; said interrupter means comprising a plate having an aperture intermittently placed in alignment with the main chute path for selectively passing containers therealong.

4,542,689

APPARATUS FOR SORTING PACKAGINGS SUCH AS CANS BASED ON THE MATERIAL THEREOF

Sten Trolle, Skansgränd 7, Ystad, Sweden

PCT No. PCT/SE82/00260, § 371 Date Apr. 14, 1983, § 102(e) Date Apr. 14, 1983, PCT Pub. No. WO83/00644, PCT Pub. Date Mar. 3, 1983
PCT Filed Aug. 16, 1982, Ser. No. 491,320
Claims priority, application Sweden, Aug. 18, 1981, 8104897
Int. Cl.[4] B30B *15/30*; B07C *5/34*
U.S. Cl. 100—215 **6 Claims**

1. A device for sorting packagings of a certain type of material from packagings of other types of materials, said apparatus comprising supporting means for transporting the packagings one by one to a compression station, first and second pressing members at said station arranged to move relative to each other to compress packagings transported by the supporting means, means for regulating the relative movement of the pressing members and for regulating the transfer of the packagings when relative movement of the pressing members has ceased, such that the pressing members, in the case of compressive forces of a magnitude within a predetermined range of compressive force required for packagings of the type of material in question, allow movement of the pressing members

towards each other to be completed, whereby the packagings assume a correspondingly maximum size before transfer to a collecting device for packagings of the type of material in question and, in the case of compressive forces of a magnitude outside said range prevent said packagings from being transferred to said collecting device, said supporting means being movable relative to the pressing members and comprising a loading member for placing the packagings in position for compression between the pressing members.

4,542,690

HEAT-SENSITIVE PRINTING MACHINE

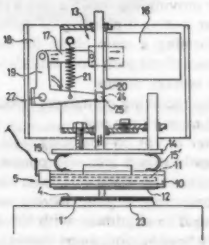
Reiji Kikuchi, Iwate, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed May 9, 1983, Ser. No. 492,579

Claims priority, application Japan, May 18, 1982, 57-71409[U]

Int. Cl.⁴ B41F *1/44*

U.S. Cl. 101—27 **4 Claims**



1. A heat-sensitive printing machine for pushing a hot printing plate against a heat-sensitive printing medium to print said printing medium with desired indicia, comprising:

a printing head including a printing plate having a plurality of types bearing said desired indicia, and a heater for heating the types of said printing plate to a proper printing temperature;

a reciprocal actuator for reciprocally bringing said printing head toward and away from a heat-sensitive printing medium to accordingly bring the types of said printing head into and out of contact with said heat-sensitive printing medium thereby to print said printing medium with the desired indicia of said types;

elastic support means for said printing head interconnecting said reciprocating actuator and said printing head;

said elastic means having a sufficiently small cross-sectional area to ensure that no more than about 20% of the heat in said printing head is conducted to said reciprocal actuator via said elastic means whereby the parallelism between the surfaces of the types of said printing plate and the surface of said printing medium can be ensured by the elasticity of said elastic means, and the loss of the heat, which will be transferred by conduction from said printing head through said elastic means to said reciprocal actuator, is kept small due to the small cross-sectional area of said elastic means thereby to maintain the types of said printing plate at said proper printing temperature with the accordingly reduced power consumption for compensating said heat loss; and

said elastic means including a pair of leaf springs formed into a semi-circular shape and each having its one end connected to said printing head and its other end connected directly to said reciprocal actuator; the leaf springs in said pair being oriented so that the opening of said semicircular shape in each spring faces the opening of the other.

4,542,691

METHOD AND APPARATUS FOR DECORATING ARTICLES UTILIZING HOT STAMPING PRESSES

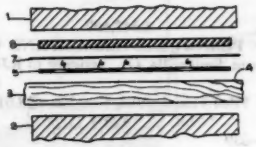
Vladimiro Kokrhanek, Vigevano, Italy, assignor to Industria & Moda di A. Pesek, Vigevano, Italy

Filed Feb. 28, 1984, Ser. No. 584,536

Claims priority, application Italy, Mar. 2, 1983, 19867 A/83

Int. Cl.⁴ B41F *15/00*; B44C *1/14*

U.S. Cl. 101—114 **9 Claims**



1. A method of stamping decorations on articles of various types by means of a hot stamping press having opposed stamping members comprising the steps of placing the article to be decorated between the stamping members, placing in contact with the surface of the article to be decorated a matrix having perforations reproducing the decorative design to be made on the surface of the article to be decorated, placing on the surface of the matrix opposite that in contact with the article a hot stamping foil having an adhesive layer with the adhesive layer facing the matrix, placing a patrix adapted to penetrate the perforations of the matrix between the hot stamping foil and one of the stamping members of the hot stamping press and operating the hot stamping press to cause the patrix to penetrate the perforations of the matrix to force the hot stamping foil through the perforations of the matrix into contact with the surface of the article to be decorated.

4,542,692

RELEASABLY COUPLED UPPER AND LOWER CARRIAGE APPARATUS FOR THE TREATMENT OF WEBS

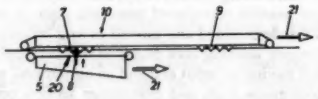
Josef Glantschnig, Wölfnitz; Peter Gugl; Ernst Puntschart, both of Klagenfurt, and Johannes P. M. Zimmer, Klagenfurt, all of Austria, assignors to Johannes Zimmer, Klagenfurt, Austria

Filed Oct. 5, 1984, Ser. No. 658,130

Claims priority, application Austria, Oct. 6, 1983, 3558/83

Int. Cl.⁴ B41F *15/46*

U.S. Cl. 101—123 **9 Claims**



1. An apparatus for the treatment of a web of material which comprises:

a fixed outer frame having longitudinal and transverse elements;

an inner support disposed wholly within said outer frame and fixed with respect to said outer frame, said support comprising a pair of longitudinally spaced transverse support members;

a support surface spanning said members of said support and longitudinally tensioned therebetween, said surface being spaced over its entire length from the longitudinal elements of said outer frame;

an upper carriage mounted on said frame and shiftable longitudinally above said surface and a web which can be

mounted on said surface, said upper carriage being provided with means for treating said web;

a lower carriage riding on said frame and disposed below said surface while carrying means cooperating with said means for treating said web; and

coupling means for releasably connecting said carriages through the spaces between the longitudinal edge of said sheet and said frame for joint movement along said sheet and said web thereon.

4,542,693

INKING METHOD AND DEVICE FOR PRINTING MACHINE

Georges Mourrellone, 37 Lot. des Queuilles, Orcet F 63670 Le Cendre, France

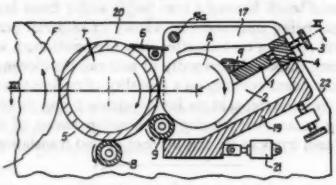
PCT No. PCT/FR83/00090, § 371 Date Jan. 10, 1984, § 102(e) Date Jan. 10, 1984, PCT Pub. No. WO83/04003, PCT Pub. Date Nov. 24, 1983

PCT Filed May 10, 1983, Ser. No. 572,748

Claims priority, application France, May 10, 1982, 8208107

Int. Cl.⁴ B41F *31/04, 31/06;* B41L *27/08*

U.S. Cl. 101—350 **11 Claims**



1. Apparatus for applying a thin film of a high viscosity ink to a rotatable printing plate, said apparatus comprising:

(a) a cylindrical inking roller having a flexible cover adapted to contact a printing plate;

(b) a cylindrical supply roller having a rigid outer surface;

(c) means for causing said supply roller to contact under pressure, said flexible cover of the inking roller along a contact zone;

(d) means for rotating said inking roller in an opposite direction and at the same peripheral velocity as the printing plate and for rotating said supply roller at a peripheral velocity lower than the peripheral velocity of the inking roller;

(e) means for providing on said supply roller and ahead of said contact zone a film of ink having a predetermined thickness from a mass of ink in contact with the surface of the supply roller and not in contact with the inking roller; and

(f) means positioned ahead of said contact zone for removing from the periphery of the inking roller ink that remains on the inking roller after it has contacted the printing plate.

4,542,694

OUT-OF-LINE UNDERWATER SAFING AND ARMING DEVICE AND METHOD THEREFOR

John L. Wells, San Carlos, Calif., assignor to Quantic Industries, Inc., San Carlos, Calif.

Filed Apr. 20, 1984, Ser. No. 602,483

Int. Cl.⁴ F42C *15/10, 15/32;* F42B *22/00*

U.S. Cl. 102—229 **7 Claims**

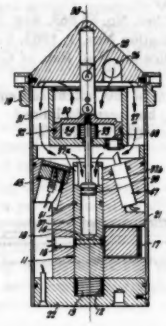
6. A method for arming a device underwater and safing it when removed from the water having a normally out-of-line barrier, the safe condition, and slidable to an in-line, armed condition, the barrier having an internal bore, said device having a first piston which is slidable in said bore, said method comprising the following steps:

launching said device into said water;

allowing water to enter and fill said bore;

allowing the increase in hydrostatic pressure to overcome air and spring forces and move said first piston towards said water filled bore;

causing said first piston to engage and hydraulically lock with said bore to entrap said water therein and to cause



said entrapped water to form an operating part of said first piston; continuing to move, in response to an increase in water pressure, said first piston and barrier as a unitary assembly to an in-line position.

4,542,695

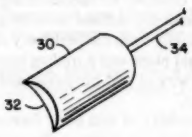
CONTOURED CONFIGURED DETONATING CORD AND DETONATOR

Robert E. Betts; John F. Crawford, and Jacqueline C. Meador, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 24, 1983, Ser. No. 478,385

Int. Cl.⁴ F42B *15/10*

U.S. Cl. 102—378 **1 Claim**



1. In a rocket having a cylindrical motor casing disposed for detonation during flight thereof, a detonation assembly embedded longitudinally in the cylindrical motor casing of said rocket comprising:

a. a detonating fuze including a sheath enclosing an explosive, said sheath having curved top and bottom intersecting surfaces and said top surface having a smaller radius of curvature than the bottom surface, so that the contour of the fuze and cylindrical motor is similar; and,

b. a detonator embedded in said motor in abutting end to end relationship with said fuze, said detonator including an explosive charge and a bridgewire for ignition thereof, said detonator having curved top and bottom intersecting surfaces, said top surface having a smaller radius of curvature than the bottom surface, so that the contour of the detonator and cylindrical motor are similar, said detonator disposed for detonating said fuze embedded in said motor whereby said motor is broken into fragments responsive to detonation by said fuze.

4,542,696

MUNITIONS ROUND FOR BARREL-TYPE WEAPONS

Bernhard Bisping, Ratingen; Peter Wallow, Dusseldorf; Klaus Gersbach, Willich, and Rudolf Romer, Kaarst, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

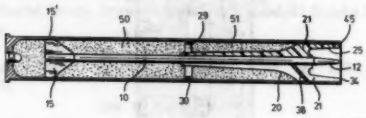
Continuation-in-part of Ser. No. 68,865, Aug. 21, 1979, Pat. No. 4,444,114. This application Nov. 1, 1983, Ser. No. 547,736

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2836963

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.[4] F42B *5/02*

U.S. Cl. 102—430 10 Claims



1. A munitions round for a barrel-type weapon, comprising:

an elongated casing having a closed rear end and an open forward end;

a fin-stabilizing subcaliber elongated projectile wholly disposed in said casing with clearance, said projectile having a large length/diameter ratio, a center of gravity between its ends, a leading end terminating in a plane of said open forward end, and a fin assembly at a tail and guided on an inner wall of said casing;

a gas-generating propellant charge in said casing at least partly surrounding said projectile; and

an elongated drive body form-fittingly engaging said projectile and disposed at least in part forwardly of said center of gravity in the direction of propulsion of said projectile, said drive body being formed with:

a plurality of segments mutually contacting at angularly spaced confronting contact surfaces at which said segments separate upon emergence of the projectile from the barrel of said weapon,

a forwardly concave air-encountering surface formed by said segments and defined between a leading outer edge spaced radially from the periphery of said projectile but lying in said plane and a trailing inner edge proximal to said periphery of said projectile and rearwardly of said outer edge,

an outer periphery of said body formed by said segments having a diameter substantially equal to the caliber of said barrel and engaged by said forward end of said casing,

at least one sealing member bridging the mutually confronting contacting surfaces, and

a pressure-receiving surface extending rearwardly from said outer periphery of said body at a circular outer edge thereof to an inner edge proximal to the periphery of said projectile and axially rearwardly of said outer edge of said body, said pressure-receiving surface being of progressively decreasing diameter rearwardly and defining a space with said casing receiving a portion of said charge, said pressure-receiving surface being outwardly concave at least in the region of said outer periphery of said body, said drive body being formed in the region of said inner edge of said pressure-receiving surface with a plurality of radially outwardly extending projections having free ends lying along circular arcs of substantially the diameter of the caliber of said barrel, said air-encountering surface defining a pocket receiving a static quantity of air and extending rearwardly of said inner edge of said air-encountering surface.

4,542,697

TRAIN FOR LAYING A NEW RAILROAD TRACK

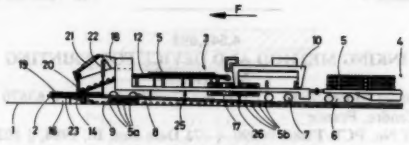
Ivo Cicin-Sain, Bussigny, Switzerland, assignor to Matisa Materiel Industriel S.A., Crissier, Switzerland

Filed Mar. 2, 1983, Ser. No. 471,245

Claims priority, application Switzerland, Mar. 12, 1982, 1523/82

Int. Cl.[4] E01B *27/08*

U.S. Cl. 104—2 9 Claims



1. A train for laying railroad track comprising cars for storing ties, means for transporting and laying ties, means for positioning rails on said ties, a single work truck supporting said tie transporting and laying means and said rail positioning means, said truck having a rear bogie and a front bogie, said rear bogie being disposed rearwardly of said rail positioning means and running on rails after they are positioned, said front bogie being disposed forwardly of said rail positioning means, translation means running on a plurality of railless ties supporting said front bogie, said tie laying means being mounted and operating in an overhanging relationship ahead of the front bogie of said truck to lay ties in front of said translation means.

4,542,698

POWER-AND-FREE TROLLEY CONVEYOR OF FLOOR TYPE

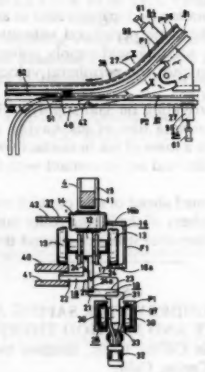
Takao Wakabayashi, Shinsenri-Minamimachi, Japan, assignor to Nakanishi Metal Works Co., Ltd., Tenmabashi, Japan

Filed Aug. 9, 1983, Ser. No. 521,592

Claims priority, application Japan, Aug. 10, 1982, 57-139563

Int. Cl.[4] B61B *10/00, 13/12*

U.S. Cl. 104—172 B 4 Claims



1. A power-and-free trolley conveyor of the floor type comprising carriers adapted to run on a free line and each including a free trolley, the free trolley being provided with a pair of right and left pivotable engaging dogs respectively having downwardly projecting engaging projections and disengaging wings, the wings projecting rightward and leftward respectively, power trolleys adapted to run on a power line extending under the free line, each of the power trolleys having a pusher dog engageable with the engaging projection of at least one of the engaging dogs and means for engaging the

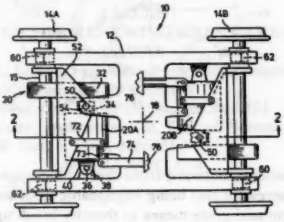
projecting wing on one of said pair of said engaging dogs for pivoting said one dog out of the path of engagement of said pusher dog on said power trolley while the other dog of said pair of engaging dogs remains engaged with said pusher dog.

4,542,699

POWERED RADIAL TRUCK

Roy E. Smith, Kingston, Canada, assignor to Urban Transportation Development Corporation Ltd., Toronto, Canada

Filed Oct. 12, 1984, Ser. No. 660,345
Claims priority, application Canada, Nov. 25, 1983, 441943
Int. Cl.[4] B61C *9/48*; B61F *5/38*
U.S. Cl. 105—99 **6 Claims**



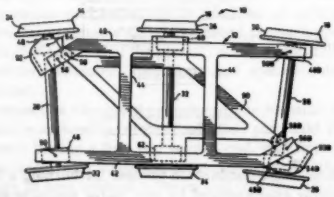
1. A motor driven truck for radial vehicles comprising:
frame means,
means to pivotally attach a railroad vehicle body to said truck,
at least two railroad wheelsets adapted to support said frame; said at least two wheelsets attached to said frame means for relative pivotal movement between each of said at least two wheelsets and said frame about first respective pivotal axes, whereby said wheelsets may move to a radial alignment when travelling on curved track,
at least one motor supported by said frame,
drive transmitting means connecting said at least one motor and one of said wheelsets said drive transmitting means comprising a flexible coupling to permit relative angular displacement between said at least one motor and said one of said wheelsets about a second axis the first axis of said one of said wheelsets coinciding with said second axis.

4,542,700

THREE AXLE STEERED TRUCK

Roy E. Smith, Kingston, Canada, assignor to Urban Transportation Development Corporation Ltd., Toronto, Canada

Filed Jan. 14, 1983, Ser. No. 457,835
Claims priority, application Canada, Dec. 30, 1982, 418770
Int. Cl.[4] B61F *5/46*
U.S. Cl. 105—166 **3 Claims**



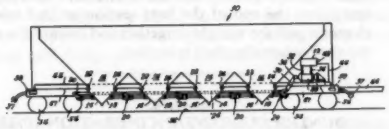
1. A three axle truck for use on a railway vehicle comprising:
a frame,
first and second axles,
a third axle intermediate said first and second axles,
said axles having flanged conical wheels attached thereto, all of said axles mounted in bearing means for rotation about respective substantially horizontal axes,
steering levers attached to at least one of each of said bearing means of said first and second axle to permit relative pivotal movement between said steering lever and said bearing means about a generally vertical axis,
each of said steering levers being attached to said frame for relative pivotal movement between said steering lever and said frame about a generally vertical axis not coincident with the axis between the bearing member and the steering lever,
each of said steering levers surrounding said attached bearing and adapted to transfer loads supported from said frame to said bearing,
means mounting said bearing means of said third axle to said frame which permit lateral movement of said third axle with respect to said frame, and inhibit pivotal movement with respect to said frame,
interconnecting means including linkage means pivotally attached to said steering levers and attached to said third axle, said interconnecting means attached to said steering lever at a location not coincident with the axis of connection between said steering lever and said frame so that lateral movement of said third axle with respect to said frame when said truck travels on curved track results in pivotal movement of said first and second axles with respect to said frame such that said first and second axles move into radial alignment,
the pivotal position of said first and second axles at all times being determined by the lateral position of said third axle.

4,542,701

TAMPER-PROOF RAILROAD HOPPER CAR DOOR OPERATING SYSTEM

Robert T. Fischer, Homewood, and Merle D. Wahlstrom, South Holland, both of Ill., assignors to Miner Enterprises, Inc., Geneva, Ill.

Filed Mar. 14, 1983, Ser. No. 475,353
Int. Cl.[4] B61D *7/00*; F15B *13/04*
U.S. Cl. 105—240 **17 Claims**



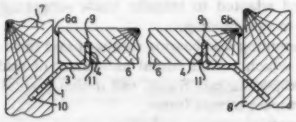
1. In a door operating and control system, the improvement comprising: a line for providing a primary source of fluid power, a door through which cargo is unloaded, means responsive to fluid power for moving said door, a reservoir connected to said line for providing a secondary source of fluid power, means for preventing the flow of fluid power from said reservoir back to the primary line source, and a control valve system responsive to external actuation for connecting said secondary source of fluid power to the door moving means for causing movement of said door, the control valve system including means for disconnecting said secondary source of fluid power from the door moving means in response to the absence of fluid power in said primary source.

4,542,702

JOINT ELEMENT TO SUPPORT AND SECURE SHELVES IN A BOOKCASE OR STAND, AND A SET OF SHELVES EMPLOYING SAID JOINT ELEMENTS TO SUPPORT AND SECURE THE SHELVES BETWEEN THE UPRIGHTS

Evert Martin Johansson, Karlberg, Tölö , S-15400 Gnesta, Sweden

Filed Mar. 21, 1983, Ser. No. 477,412
Claims priority, application Sweden, Apr. 13, 1982, 8202305
Int. Cl.[4] A47B *9/00*
U.S. Cl. 108—109 **7 Claims**



1. A shelf assembly comprising:

two vertically disposed, spaced apart uprights having respective opposed facing faces; a respective recess defined in each of the faces for being opposite a recess in the other face, whereby the two recesses are paired to cooperate, each of said recesses in said uprights having an opening at said face and each said recess extending obliquely downward into the respective upright away from the other upright;

a shelf disposed between the uprights, the shelf having a lower surface; the shelf having opposite ends at the uprights; a respective recess into the lower surface of the shelf spaced inward from each of the ends, and extending upward into the shelf and being accessible through the lower surface; and

a respective joint element for each end of the shelf for joining the shelf to both uprights, each joint element comprising a wire bent in one plane to form a bent section including a first upstanding inserting part for insertion from below into the respective recess in the shelf; the bent section also including a supporting section which extends from the first inserting part along the lower surface of the shelf toward the upright, the bent section having an end slightly inward from the shelf end at that upright, and

a second inserting part which extends obliquely downward from the end of the bent section, the second inserting part of each respective joint element being receivable in the respective oblique recess of the respective upright, each second inserting part thereby extending obliquely to a point slightly inward from the shelf end at the respective upright to the end of the bent section so that said joint elements pull the uprights together and toward the ends of the shelf when the shelf is loaded.

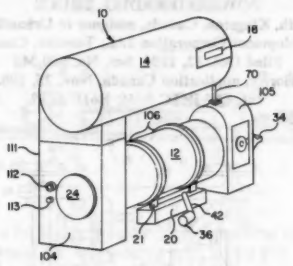
4,542,703

COUNTER CURRENT INCINERATION UNIT

Zygmunt J. Przewalski, Granby, Conn., assignor to MSP, Inc., Broad Brook, Conn.

Filed Oct. 19, 1984, Ser. No. 662,572
Int. Cl.[4] F23G *5/06*
U.S. Cl. 110—246 **7 Claims**

1. In an incinerator unit, an incineration chamber supported between first and second stationary end chambers, said incineration chamber having a main portion and a neck portion, said neck portion communicating with first end chamber to form an inlet opening into said incineration chamber, feed means for delivering waste material into said incineration chamber extending through said first end chamber to a first end of said incineration chamber; said incineration chamber being mounted for rotation for imparting tumbling movement to waste material fed into said incineration chamber, a burner for directing flame into said incineration chamber mounted on said second end chamber and fixed in position at a second end of said incineration chamber; said second end chamber providing a discharge receptacle into which incinerated material will discharge from said second end of said incineration chamber, and a grate means mounted over said discharge receptacle of said second end chamber, and at least one member connected



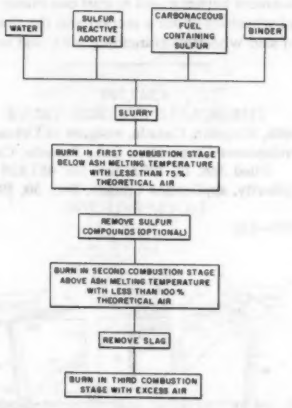
to and extending outward from said incineration chamber for rotation therewith and being engageable with waste materials collected on said grate means to thereby break up and assist in the separation of waste material, whereby said incineration unit enables said waste material fed into said incineration chamber at first end thereof to be dried by flow of gas from said second end as said waste material progresses toward said second end.

4,542,704

THREE-STAGE PROCESS FOR BURNING FUEL CONTAINING SULFUR TO REDUCE EMISSION OF PARTICULATES AND SULFUR-CONTAINING GASES

Melvin H. Brown, Freeport, and David H. DeYoung, Plum, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 14, 1984, Ser. No. 681,672
Int. Cl.[4] F23D *1/00*
U.S. Cl. 110—347 **19 Claims**


WATER
SULFUR REACTIVE ADDITIVE
CARBONACEOUS FUEL CONTAINING SULFUR
BINDER
SLURRY
BURN IN FIRST COMBUSTION STAGE BELOW ASH MELTING TEMPERATURE WITH LESS THAN 75% THEORETICAL AIR
REMOVE SULFUR COMPOUNDS (OPTIONAL)
BURN IN SECOND COMBUSTION STAGE ABOVE ASH MELTING TEMPERATURE WITH LESS THAN 100% THEORETICAL AIR
REMOVE SLAG
BURN IN THIRD COMBUSTION STAGE WITH EXCESS AIR

1. A three-stage combustion process for burning a fuel containing sulfur characterized by low sulfur emission and good ash removal comprising:

(a) mixing the sulfur containing fuel with an additive capable of reacting with sulfur;

(b) burning the mixture in a first combustion stage with less than 75% theoretical air and at a temperature below the melting point of the ash but sufficiently high to cause

reaction between said additive and any sulfur in said fuel to facilitate removal of the sulfur compounds formed;

(c) passing combustible fuel gases from said first stage to a second combustion stage;

(d) burning said gases in said second stage with less than 100% theoretical air, based on theoretical air for products from the first stage, at a temperature above the melting point of the ash to form a liquid slag which is removable from said second stage; and

(e) burning combustible gases from said second stage in a third stage with an excess of air to ensure complete combustion of said fuel.

4,542,705

APPARATUS FOR RENEWING GREEN AREAS AND LAWNS

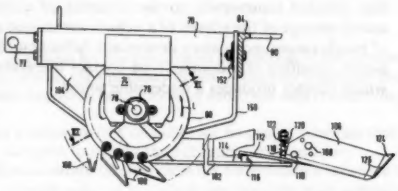
Günther Orth, Birken, Fed. Rep. of Germany, assignor to Wolf-Gerate GmbH, Fed. Rep. of Germany

Filed Oct. 25, 1983, Ser. No. 545,133

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1982, 3239469; Oct. 6, 1983, 3336455

Int. Cl.⁴ A01C *5/06*

U.S. Cl. 111—85 **8 Claims**



1. Apparatus for producing parallel-walled seed grooves, said apparatus comprising:

a frame;

rotatable means rotatably supported on said frame, said rotatable means including a shaft and a plurality of disc pairs, said plurality of disc pairs being spacedly securable to said shaft, said shaft extending through said plurality of disc pairs, each said disc pair having first and second opposing and spaced outer peripheral perimeters;

a plurality of first and second cutting means supported on each said disc pair, said first and second cutting means being arranged in pairs and positioned, respectively, on first and second discs of said disc pair and projecting outward of said perimeters;

each said first cutting means being positioned on said first perimeter opposite the second cutting means positioned on said second perimeter;

said pairs of cutting means being positioned such that the area, which is defined between said first and second cutting means and traversed by one pair of cutting means when said rotatable means is rotated, is overlapped by the same defined area of the pair of cutting means following in rotation, whereby continuous and spaced cuts will be formed;

one respective elongated runner and one respective capping share associated with each said disc pair, said respective runner having a first and second end, said first end being attached to said frame and extending rearward thereof and along an area defined between said continuous cuts associated with said respective disc pair, said capping share being supported at said second end of said respective runner, said capping share including resiliency means for resiliently mounting capping share to bear against said area, and means for varying the resiliency of said resiliency means;

adjacent ones of said runners having different lengths to allow said capping share to extend in a staggered arrangement behind said apparatus.

4,542,706

LOWER THREAD TENSION ADJUSTING DEVICE OF SEWING MACHINE

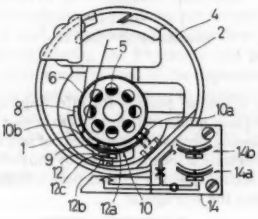
Susumu Hanyu; Kazumasa Hara, and Mikio Koike, all of Tokyo, Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Dec. 23, 1983, Ser. No. 565,253

Claims priority, application Japan, Dec. 23, 1982, 57-194114[U]

Int. Cl.⁴ D05B *63/00, 57/26*

U.S. Cl. 112—229 **2 Claims**



1. A lower thread adjusting device used in combination with a sewing machine comprising a horizontal rotary loop taker, a bobbin carrier positioned in the horizontal loop taker and kept stationary with respect to the loop taker, a bobbin loaded with a lower thread and contained in the bobbin carrier, an arcuate base plate secured to the bobbin carrier, a resilient plate having one end secured to the base plate and the other free and resiliently contacting the base plate, and an adjusting screw being manipulated to adjust tension applied to a lower thread inserted between the resilient plate and the base plate, the improvement wherein:

(a) said base plate has a reference mark and said adjusting screw has an index mark at a flange portion thereof, so that said adjusting screw is rotated to bring said index mark into alignment with said reference mark to thereby give a predetermined standard tension to said lower thread; and

(b) said bobbin carrier is provided at an upper portion thereof with a circumferential vertical wall, which defines a space between a part thereof and said base plate for accommodating said flange portion of said adjusting screw and which includes an opening formed in alignment with said adjusting screw so as to make said adjusting screw operable therethrough, said opening being smaller than said flange portion of said adjusting screw.

4,542,707

SEWING MACHINE HAVING AUXILIARY WORK TURNING NEEDLE

Dieter Balzer, Heiligenmoschel, and Walter Hager, Kaiserslautern, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 627,791

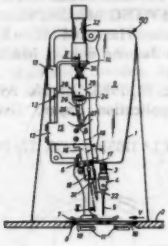
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1983, 8320716[U]

Int. Cl.⁴ D05B *35/04*

U.S. Cl. 112—310 **5 Claims**

1. A device for use with a sewing machine having at least one stitching needle which reciprocates into a workpiece that is fed over a support to form stitches, comprising an auxiliary needle having a point, a slide rod connected to said auxiliary needle and having a longitudinal axis which is offset from said point, a bushing mounted at a fixed location with respect to the sewing machine, said bushing carrying said slide rod for longi-

tudinal movement parallel to its axis and for rotation about its axis, drive means operatively connected to said slide rod for moving said slide rod and guide means engaged with said slide rod for guiding movement of said slide rod through a path having a first portion effecting rotation of said slide rod about



its axis, and a second portion for effecting only longitudinal movement of said guide rod along its axis, said rotation of said guide rod causing pivotal displacement of said auxiliary needle point to a penetration location whereby movement of said slide rod in said second portion of said path causes penetration of said point into the workpiece.

4,542,708

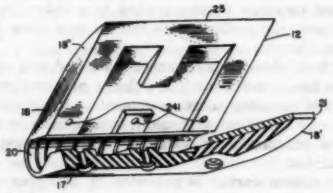
COMPOSITE CABLE FAIRING

Robert R. Holcombe, S. Kingstown; Steven G. Parks, Middletown, and Patrick M. Brogan, Bristol, all of R.I., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 6, 1984, Ser. No. 568,675

Int. Cl.⁴ B63B *21/00*

U.S. Cl. 114—243 **13 Claims**



1. A fairing segment for a cable comprising:

a body of an elastomeric material having a cylindrical nose portion and a tail portion of a streamline shape connected to said nose portion;

said cylindrical nose portion having a hole with a hole axis coincident with the axis of said cylinder for said cable;

said nose having its hole lined with a flexible insert;

said insert being constructed of a material having a hardness greater than that of said body; and

said insert being bonded to said body.

4,542,709

HIGHWAY WARNING DEVICE

Randall E. Spaugh, R.R. 1, Box 135, Oakley, Ill. 62552

Filed Sep. 20, 1984, Ser. No. 652,226

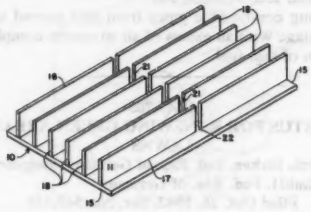
Int. Cl.⁴ E01F *9/00*; G08B *3/00*

U.S. Cl. 116—63 P **2 Claims**

1. An improved portable highway warning device comprising:

(a) a mat having substantially flat upper and lower surfaces, fabricated of a flexible resilient composition and having an elongated rectangular periphery characterized in having a long length direction and shorter width direction, and

(b) a series of substantially rigid panels of uniform elongated rectangular periphery characterized in having a long length direction and shorter height direction, said panels being attached in a parallel array to said mat, extending upwardly in their height direction from the upper surface of said mat, extending in their length direction in the length direction of said mat, and spaced apart in the width direction of said mat a uniform distance less than the height of said panels, whereby



(c) when the device is placed with the lower surface of the mat resting upon a roadway surface and the length direction oriented transversely to the direction of vehicular travel, passage of the wheels of a vehicle across said array of panels causes momentary downward deflection of said panels, resulting in a domino-type contact therebetween which contact produces a discernible sound.

4,542,710

SOLUTION-DROPPING NOZZLE DEVICE

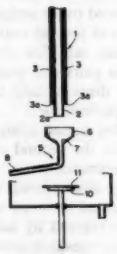
Muneo Nakayama, Tokyo, Japan, assignor to Tokyo Denshi Kagaku Co., Ltd., Kanagawa, Japan

Filed Aug. 26, 1983, Ser. No. 526,607

Claims priority, application Japan, Aug. 30, 1982, 57-151351

Int. Cl.⁴ B05C *11/08*

U.S. Cl. 118—52 **11 Claims**



1. A solution-dropping nozzle device, comprising:

an inner tube of a relatively large constant diameter which permits a solution to flow down therethrough;

a plurality of outer tubes of a relatively small diameter adapted to supply a cleaning solvent to a lower end part of said inner tube;

said outer tubes having at least lower end parts thereof tight-fitted on an outer circumferential portion of said inner tube so as to enclose the same substantially continuously; and

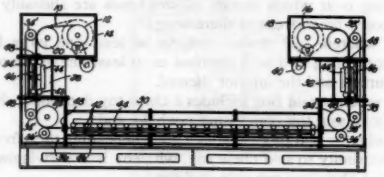
said outer tubes having the lower ends thereof positioned higher than the lower end of said inner tube.

4,542,711

CONTINUOUS SYSTEM FOR DEPOSITING AMORPHOUS SEMICONDUCTOR MATERIAL

Masatsugu Izu, Birmingham, and Herbert C. Ovshinsky, Oak Park, both of Mich., assignors to Sovonics Solar Systems, Solon, Ohio

Filed Mar. 16, 1981, Ser. No. 244,386
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.[4] C23C *13/10*
U.S. Cl. 118—718 4 Claims



1. A system for the continuous production of semiconductor devices wherein a plurality of semiconductor layers are continuously deposited onto a moving substrate, said system comprising:

(a) a substrate feed chamber for housing a substrate feed reel adapted to supply the substrate for deposition;

(b) a substrate take-up chamber for housing a substrate take-up reel adapted to collect the substrate after deposition;

(c) at least three dedicated, operatively interconnected deposition chambers; at least one of the chambers being dedicated for the deposition of a p-type semiconductor layer, at least one of the chambers being dedicated for the deposition of an i-type amorphous semiconductor layer, and at least one of the chambers being dedicated for the deposition of an n-type semiconductor layer;

(d) means for sequentially and continuously advancing the substrate from the feed reel in the supply chamber, through the deposition chambers, and onto the take-up reel in the take-up chamber;

(e) reaction gases, said gases including at least one semiconductor material;

(f) means for introducing the reaction gases into each deposition chamber;

(g) isolation means operatively interconnecting each pair of adjacent deposition chambers for (1) providing a passageway through which the substrate is adapted to travel between each pair of adjacent chambers, and (2) substantially preventing the free flow of reaction gases between each pair of adjacent chambers; whereby the reaction gases introduced into one chamber of the pair of adjacent deposition chambers are substantially protected from contamination by the reaction gases introduced into the adjacent chamber of the pair;

(h) the feed chamber, the take-up chamber, the at least three deposition chambers and the isolation means being evacuated, thereby isolating the entire path of travel of the substrate through the deposition system from ambient conditions;

(i) decomposition means in each decomposition chamber, each of said decomposition means adapted to form a decomposition region for disassociating the reaction gases introduced into each decomposition chamber and depositing a semiconductor layer onto the substrate;

(j) the introducing means adapted to introduce the reaction gases into each deposition chamber proximate the decomposition region; said introducing means including baffle means adapted to provide a substantially uniform flow and a substantially uniform pressure of reaction gases across the entire surface of the substrate as the substrate passes through the decomposition region;

(k) an exhaust port disposed proximate the decomposition region of each deposition chamber;

(l) means for uniformly withdrawing nondeposited raaction gases from the exhaust port of each deposition chamber; said withdrawing means cooperating with the gas introducing means and the isolation means to substantially prevent nondeposited reaction gases from one chamber of a pair of deposition chambers from diffusing through the isolation means passageway and contaminating the reaction gases in the adjacent chamber;

(m) means for regulating the supply of reaction gases into and from each of the deposition chambers;

(n) means for heating and regulating the temperature of said substrate in each of the deposition chambers; and

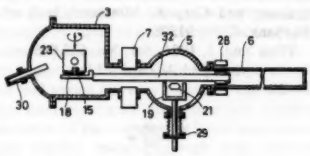
(o) means for regulating the frequency and power of the decomposition means in each of the deposition chambers, whereby the apparatus is adapted to continuously deposit successive, high quality semiconductor layers onto the substrate as the substrate passes from the feed chamber, through each of the at least three interconnected deposition chambers, and into the take-up chamber.

4,542,712

APPARATUS FOR MOLECULAR BEAM EPITAXY

Kazuo Sato, Suginami; Sumio Yamaguchi, Nishitama; Shigeo Kato, Mitaka; Yasuhide Matsumura, Hachioji; Muneo Mizumoto, Tsuchiura; Sumio Okuno, and Naoyuki Tamura, both of Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 22, 1984, Ser. No. 623,370
Claims priority, application Japan, Jun. 24, 1983, 58-112721
Int. Cl.[4] C23C *13/12*
U.S. Cl. 118—726 2 Claims



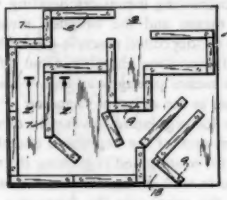
1. An apparatus for molecular beam epitaxy comprising means to introduce a substrate into said apparatus with a substrate surface for epitaxial growth facing in a gravitational direction, processing chamber means to perform processes necessary for the epitaxial growth of the substrate surface by a molecular beam in ultrahigh vacuum, means capable of conveying the introduced substrate into said processing chamber means in the state in which the substrate surface is maintained in the gravitational direction, and means capable of transferring the introduced substrate to the conveyance means and transferring it between said conveyance means and said processing chamber means in the state in which the substrate surface is maintained in the gravitational direction, a thin film crystal being grown on the substrate surface by the molecular beam epitaxy, and means for rearranging the substrate surface of the substrate conveyed into said processing chamber means in a substantially vertical direction and setting the substrate surface toward an irradiation position of the molecular beam.

4,542,713

KIT FOR MAKING AN ANIMAL MAZE

John M. Hansen, 38 Hill St., Williams Bay, Wis. 53191

Filed May 17, 1984, Ser. No. 611,175
Int. Cl.[4] A01K *29/00*
U.S. Cl. 119—1 3 Claims



1. A kit for making an animal maze comprising:
(a) a plurality of generally rectangular partitions, each partition having a lower edge and a top edge and being relatively high to form an animal passageway;
(b) at least one fastener permanently embedded in the lower edge of each partition, the fastener being formed with an annular projecting flange interposed between a first pointed shank embedded in the partition lower edge and a second pointed shank protruding from the partition lower edge said flange being embedded in and recessed within the lower edge of said partition; and
(c) a bottom plate having a relatively wide and substantially imperforate top surface adapted to receive and releasably grip the fasteners when the fastener's lower shanks are inserted into the bottom plate at any point along said top surface to afford random orientation of said partitions for an indeterminate number of maze patterns with the lower edge of said partition being in continuous abutting contact with said top surface.

4,542,714

BIRD EXERCISER AND AMUSEMENT TOY DEVICE

John T. Ingraham, and Gary A. Mortimer, both of 2504 N. Lincoln, Burbank, Calif. 91506

Filed Aug. 3, 1984, Ser. No. 637,585
Int. Cl.[4] A01K *31/12*
U.S. Cl. 119—29 3 Claims

1. An improved bird exerciser and amusement toy device, said device comprising, in combination:
(a) a length of flexible chain comprising a plurality of closed, interconnected hoop-like links;
(b) hook means connected to the upper end of said chain and adapted to releasably secure said chain in a vertical orientation to wire of a bird case;
(c) a plurality of colored, bird attractive, non-removable beads slideably disposed on at least certain of said links and individually moveable thereon by a bird for its exercise and amusement; and,
(d) at least one of a sitting ring, a bell and a chew toy secured to said chain adjacent the lower end thereof,
(e) wherein said beads are at least one of oval, round, disc-shaped, rectangular shaped and square shaped in configuration,
(f) wherein said lower end of said chain includes a sitting ring over which certain of said beads are slideably disposed for movement therealong,
(g) wherein said device includes at least one large bead containing bird seed disposed on at least one of the outer surface and the interior thereof,
(h) wherein said ring includes a chew toy depending therefrom, said toy comprising rawhide, and
(i) wherein said ring includes a gong depending therefrom in proximity to said chew toy, whereby lateral swinging of said chew toy can ring said gong.

4,542,715

INSULATING ASSEMBLY FOR ANIMAL WATERERS

Donald J. DeRoos, 504 34th Ave., Council Bluffs, Iowa 51501

Filed Jan. 23, 1984, Ser. No. 572,872
Int. Cl.[4] A01K *7/00*
U.S. Cl. 119—72 6 Claims

1. In combination, a waterer for animals comprising a container holding water with a bottom, side walls and an open top, an insulating sheet of flexible, closed-cell foam material having a shape similar to the shape of the top of the container but smaller to leave a gap between edges of the sheet and the side walls of the container, said sheet being on the surface of the water, said sheet having an intermediate opening therein spaced from the edges thereof and communicating with the water, a plurality of weights located in the water below said sheet, and lines connected to said weights and to said sheet to prevent said sheet from being blown out of the water, said lines being connected to said sheet by extending through openings in said sheet and through openings in members above said sheets, with the upper ends of said lines having enlargements above said members, said weights having central openings through which said lines extend, with said lines having lower enlargements below said weights.

4,542,716

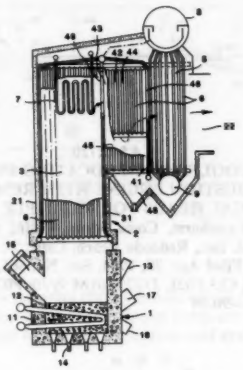
FLUIDIZED BED COMPACT BOILER

Jacques Dreuilhe, L'Isle Adam; Roger Puff, Lens; Jean-Claude Kita, Vermelles, and Jean-Francois Large, Compiegne, all of France, assignors to Creusot-Loire; Charbonnages de France, both of Paris and Institut Francais du Petrole, Rueil Malmaison, all of, France

Filed Jun. 21, 1984, Ser. No. 622,821
Claims priority, application France, Jun. 21, 1983, 83 10233
Int. Cl.[4] F22B *1/00*
U.S. Cl. 122—4 D 2 Claims

1. Compact fluidized bed boiler having at its lower part a combustion chamber (1) which communicates with an enclo-

sure (2) forming, in succession, an exchange chamber (3) containing water tubes (6, 7), an exchange and dust removal chamber (4), and a terminal exchange chamber (5), said exchange and dust removal chamber being divided into first and second half chambers (43, 44) communicating at their lower parts by a vertical internal partition (42), said first half chamber (43) communicating with said exchange chamber (3) through an inlet orifice (46) located laterally relative to said internal partition (42) and facing a wall (41) so that fumes enter substantially parallel to said partition (42) and are stopped by said wall (41) so as to change direction and to be de-dusted, said second half chamber (44) communicating with said terminal exchange chamber (5) through an outlet orifice (47) located laterally relative to said internal partition (42) and opposite said inlet orifice (46) so as to cause a further change of direction of said fumes as well as supplementary de-dusting.

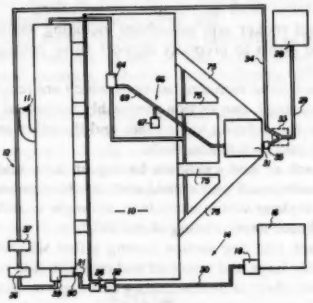


4,542,717

FUEL VAPORIZATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Jei S. Choe, 677 Gaines St., Port Charlotte, Fla. 33950

Filed Sep. 26, 1983, Ser. No. 535,705
Int. Cl.[4] F02M *25/02*
U.S. Cl. 123—25 B **8 Claims**



1. A fuel vaporization system of the type primarily designed for an internal combustion engine in an automobile or like vehicle, said system comprising:

(a) vaporization means mounted in heat receiving relation to an exhaust manifold of an internal combustion engine and structured to vaporize fluid flow therein,

(b) liquid delivery means including a fuel delivery system and a water delivery system each structured to provide independent and concurrent delivery of liquid fuel and water respectively to said vaporization means,

(c) control means including a switching assembly interconnected between a source of elecrtrical power and said liquid delivery means and structured to regulate liquid flow of said fuel delivery system and said water deliver system to said vaporization means,

(d) vapor delivery means disposed downstream of said vaporization means and comprising vapor conduit means at least partially defining said path of vapor flow and further including a vapor control means disposed in communicating relation to said conduit means and structured to regulate vapor flow therein to the intake manifold,

(e) said vapor control means further compising a carburetor linkage means interconnected thereto and structured and disposed to activate a carburetor of the internal combustion engine and regulate air flow through the carburetor to the plurality of cylinders of the engine, said carburetor linkage means being further interconnected to an accelerator structure of the automobile such that manipulation of the carburetor causes concurrent activation of said vapor control means and delivery of said fuel-water vapor to the plurality of cylinders of the engine,

(f) said vaporization means comprising a vaporization chamber disposed in heat-receiving relation to the exhaust manifold and including an entrance zone and an exit zone; said vaporization chamber further comprising conduit means mounted on the interior of said vapor chamber and structured to define a path of travel of fluid flow therein from said entrance zone to said exit zone,

(g) said conduit means being pressurized and including a pressure sensor means disposed in communication therewith and structured for determining the pressure within said conduit means,

(h) said control means further including a pressure control means interconnected to said pressure sensor means for regulating pressure within said conduit means, said pressure control means interconnected in flow regulating relation to each of said fuel and said water delivery systems, said pressure control means being calibrated to maintain at least a predetermined minimum pressure within said conduit means, said pressure control means being structured to cease flow from said liquid delivery means to said conduit means upon pressure therein being substantially equal to and greater than said predetermined minimum pressure,

(i) said vapor control means being cooperatively structured with said vapor delivery means to cause delivery of fuel-water mixture to said intake manifold independent of the carburetor of the engine, the latter interconnected to said vapor control means through said carburetor linkage means to regulate air flow in preset proportion to said vapor mixture and concurrently therewith.

4,542,718

ENGINE DETECTING DEVICE

Erwin E. Hurner, 2605 S. Rivershore Dr., Moorhead, Minn. 56560

Continuation-in-part of Ser. No. 561,839, Dec. 15, 1983, Pat. No. 4,475,498, and a continuation-in-part of Ser. No. 561,739, Dec. 15, 1983, which is a continuation-in-part of Ser. No. 192,077, Sep. 29, 1980, abandoned. This application Oct. 5, 1984, Ser. No. 658,400
Int. Cl.[4] F02B *77/08*
U.S. Cl. 123—41.15 **7 Claims**

1. A detection device for sensing lubricant and coolant levels in a motor driven vehicle, comprising

a multiplicity of lubricant level probes;

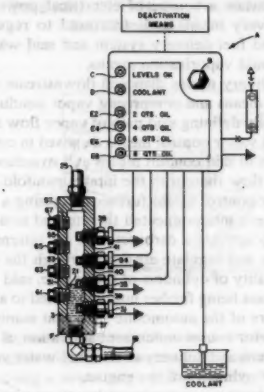
a coolant level probe;

circuitry communicating with said probes;

a normally off pressure switch activating said circuitry;

a first light emitting diode communicator with said circuitry

to light if all of said probes detect the presence of the appropriate fluid; and



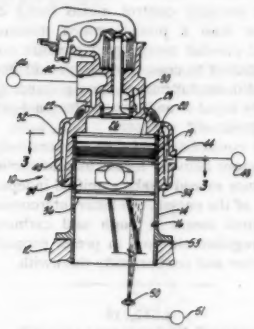
other light emitting diodes associated with said coolant and lubricant level probes and said circuitry to light in the absence of appropriate fluid instead of said light emitting diode.

4,542,719

ENGINE COOLING SYSTEM

Ronald E. Wilkinson, Mobile, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jul. 25, 1984, Ser. No. 634,207
Int. Cl.[4] F01P *3/02*
U.S. Cl. 123—41.35 **2 Claims**



1. A reciprocating internal combustion engine comprising:

at least one elongated tubular and cylindrical cylinder, said cylinder being open at each end,

a crank case,

means for mounting an inner end of said at least one cylinder to said crank case,

a piston reciprocally slidably mounted in each of said at least one cylinder and having a portion contacting said cylinder at an inner end and an outer end of said piston, said piston being movable between an inner position and an outer position,

a jacket secured to and closing said outer end of said piston, said jacket having an inner end which is passed axially outwardly from the inner piston contacting portion when said piston is in said outer position,

a coolant passage formed in said jacket and means for passing a liquid coolant through said passage,

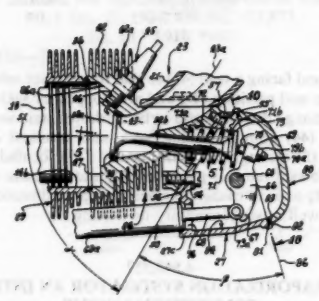
means for cooling said cylinder between said jacket and said crankcase comprising nozzle means mounted in said crank case and means for supplying pressurized coolant to said nozzle means so that said nozzle means spray coolant on an underside of said piston, said underside of said piston being open to the lower end of said cylinder.

4,542,720

AIR-COOLED RECIPROCATING INTERNAL COMBUSTION ENGINE WITH REMOVABLE INDIVIDUAL HEADS FOR MULTIPLE CYLINDERS

Francis R. Lyndhurst, Costa Mesa, Calif., assignor to Seat Enterprises, Inc., Redondo Beach, Calif.

Filed Apr. 30, 1984, Ser. No. 605,576
Int. Cl.[4] F02L *1/32*; F01M *9/10*; F02F *1/42*
U.S. Cl. 123—90.38 **12 Claims**



2. In an internal combustion engine having at least two side-by-side cylinders associated with a common metallic block, the improvement comprising

(a) first and second heads separately connected to, and detachable from their respective cylinders,

(b) and rocker arm assemblies including shafts carried by said heads to pivotally support valve controlling rocker arms,

(c) each head including sections which are removably interconnected, one section removably connected to the cylinder and defining valve seats, and the other section carrying said rocker arm shaft,

(d) each of said cylinders having an axis, said axes being parallel, each pair of said sections interconnected along a first plane which extends at an angle α relative to said cylinder axes, α being about 58°,

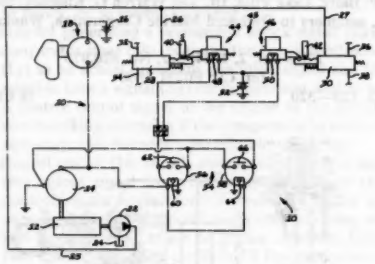
(e) each said one section having a first side which is relatively large and a second and opposite side which is relatively short as determined by said angle α, said one section defining, proximate said first side, an intake air/fuel mixture flow duct which extends, with smooth curvature, generally lengthwise of and through said one side and toward an intake valve seat spaced from said cylinder,

(f) there being valve stems actuated by said rocker arm assemblies, the valve stems solely carried by said head one section via valve guides which are generally in lateral registration with the longitudinal intersections of the flow duct with said first side.

4,542,721
STARTING SYSTEM/HYDRAULIC SYSTEM INTERLOCK

Hugh K. Williams, Davenport, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 6, 1984, Ser. No. 597,325
Int. Cl.[4] F02N 11/08
U.S. Cl. 123—179 K 2 Claims



1. A system for ensuring that hydraulic valves for regulating fluid flow supplied by an engine driven pump are in an unactuated position prior to starting the engine, said system comprising:

(a) an engine;

(b) a starter motor engageable with said engine;

(c) means for delivering a signal to said starter motor to start said engine;

(d) a plurality of valves each movable between an actuated position and an unactuated position; and

(e) actuating means responsive to said starting signal for one of automatically moving said valves occupying said actuated position to an unactuated position and blocking delivery of said starting signal to said starting motor in response to any of said valves being in said actuated position, said automatic valve moving actuating means including

(a) disengagement means for driving said valves to the unactuated position in response to an engagement signal which is separate from said starting signal and

(b) switching means for delivering said engagement signal to said disengagement means only in response to said starting signal,

said signal blocking actuating means including

(a) first switching means for blocking delivery of said starting signal to said starting motor in response to a valve position indicator signal and

(b) indicator means for electrically delivering an indicator signal in response to any of said valves being in said actuated position, wherein said indicator means includes

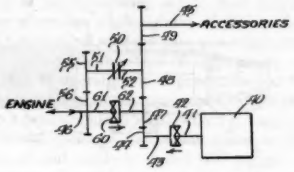
linkage structure being movable with said valves between first and second positions which respectively correspond to said valves' actuated and unactuated positions; and second switching means mounted independently of said linkage structure for delivering said indicator signal to said first switching means in response to said linkage structure occupying said first position.

4,542,722
COMBINED ENGINE-STARTER AND ACCESSORY DRIVE SYSTEM

Richard W. Reynolds, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 19, 1983, Ser. No. 562,962
Int. Cl.[4] F02N 17/00
U.S. Cl. 123—179 E 7 Claims

1. A combined engine-starter and accessory drive system comprising, a power source with an output shaft, an accessory drive shaft, a series of meshing gears and an overrunning clutch interconnecting said shafts whereby rotation of said output shaft rotates said accessory drive shaft, an engine drive shaft, intermeshing gears one of which is connected to said engine drive shaft, a drive connection between the other of said intermeshing gears and one of said series of meshing gears

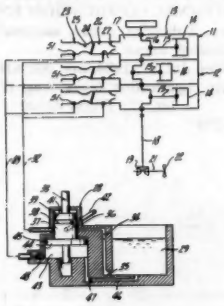


and including a disengageable slip clutch, and another drive connection between the engine drive shaft and said series of meshing gears in parallel drive relation with the first-mentioned drive connection and including an overrunning clutch operable to transmit rotation only from the engine drive shaft to said series of meshing gears.

4,542,723
STARTING FUEL INCREASING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hiroaki Fujimoto, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 24, 1983, Ser. No. 507,508
Claims priority, application Japan, Jul. 30, 1982, 57-132071
Int. Cl.[4] F02M 1/16
U.S. Cl. 123—187.5 R 15 Claims

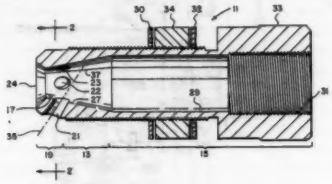


1. In a starting fuel system for an internal combustion engine comprising a fuel source and cold starting enrichment means for supplying fuel from said fuel source to said engine including control means movable between a normal position wherein said cold starting enrichment means does not provide fuel from said fuel source to the engine and a cold enrichment position for supplying fuel from said fuel source to the engine, the improvement comprising means coupled mechanically to said control means so as to be responsive to movement of said control means from its normal position to its cold enrichment position for supplying a charge of additional fuel from said fuel source to the engine for starting simultaneous with movement of said control means from its normal position to its cold enrichment position.

4,542,724
FLAME INJECTOR FOR INTERNAL COMBUSTION ENGINES

Gordon A. Blais, P.O. Box 1586, Cupertino, Calif. 95015

Filed Sep. 22, 1982, Ser. No. 421,408
Int. Cl.[4] F02B *19/10*
U.S. Cl. 123—266 5 Claims



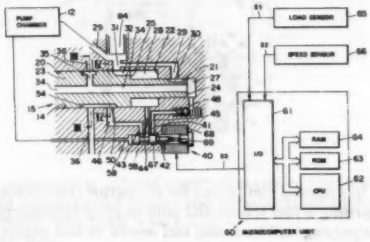
1. A spark chamber for a spark plug comprising,

a cylindrical sleeve having axial forward and rearward portions, an inner bore and an outer surface, the axial forward portion having a forward end joined thereto by an annular perforated region, the perforated region having a plurality of symmetrically spaced passages tapered inwardly at an angle in a pinwheel manner and rearwardly, the forward portion of the sleeve having a frusto-conical inner surface at a small angle for swirling gas flow in relation thereto, the forwardmost region defining an axial aperture capable of negative pressure communication with said symmetrically spaced passages for drawing gas into the sleeve, the rearward inner bore portion of the sleeve having a thread pattern adapted to seat a spark plug, an outer surface portion of the sleeve intermediate the forward and rearward having a thread pattern adapted to be seated in a spark plug receiving chamber of an engine the spark plug having electrodes located rearwardly of said annular perforated region.

4,542,725
FUEL INJECTION RATE CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jul. 31, 1984, Ser. No. 636,413
Claims priority, application Japan, Aug. 17, 1983, 58-149143
Int. Cl.[4] F02M *41/00*
U.S. Cl. 123—299 12 Claims



1. A fuel injection control system for an internal combustion engine having a crankshaft and a combustion chamber, comprising:

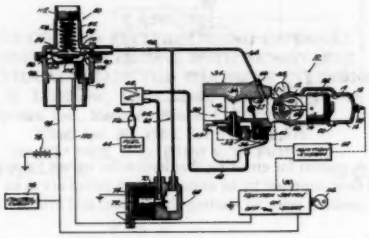
(a) first means for periodically injecting fuel into the combustion chamber at a first timing within an engine cycle with respect to rotation of the crankshaft; and

(b) second means for periodically injecting fuel into the combustion chamber at the first timing and also at a second timing within said engine cycle with respect to rotation of the crankshaft, the second timing preceding the first timing, the rate and quantity of fuel injection by the second means at the first timing being dependently and inversely related to the rate and quantity of fuel injection by the second means at the second timing.

4,542,726
DECELERATION ENRICHMENT FUEL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Gene F. Baltz, Lake Villa, Ill., and Warren G. Kingsley, Stuart, Fla., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 2, 1984, Ser. No. 626,973
Int. Cl.[4] F02M *3/00*
U.S. Cl. 123—320 18 Claims

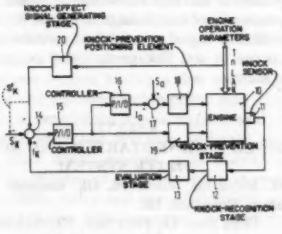


1. An internal combustion engine comprising means defining a low pressure zone wherein sub-atmospheric pressure is created in response to engine operation, a primary fuel delivery system for delivering fuel from a fuel source to said engine for normal engine operation, and a secondary fuel delivery system for delivering enrichment fuel from a fuel source to said low pressure zone, said secondary fuel delivery system including normally closed valve means for controlling fuel flow to said low pressure zone, and means for selectively actuating said valve means to an open position in response to a pressure in said low pressure zone below a predetermined level.

4,542,727
INTERNAL COMBUSTION ENGINE OPERATING CONTROL SYSTEM AND METHOD

Heinz Britsch, Bietigheim; Martin Klenk, Backnang; Ernst Linder, Mühlacker, and Winfried Moser, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 419,933
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142729
Int. Cl.[4] F02D *37/00*
U.S. Cl. 123—435 15 Claims



1. Internal combustion engine (10) operating control system comprising

combustion sensor means (11) for sensing knocking combustion conditions;

signal processing means (12,13) receiving signals from the knock sensing means representative of knocking combustion conditions and other engine combustion operating conditions, and providing a knock condition signal;

engine control means (18,19) having parameter adjusting elements for controlling a plurality of operating conditions of the engine, and capable of changing the operating conditions thereof in the manner to reduce the tendency to knock, or to inhibit knocking;

means for generating a permissible knock signal (S_K);

a comparator stage (14) receiving the knock condition signal (I_K) as an actual operating condition signal and the permissible knock signal (S_K) for comparison, and to provide a control output signal to the engine in the direction of non-knocking operation if the comparison by said comparator stage (14) exceeds a permissible value; and

a control circuit (15, 16, 17) connected to receive said control output signal from the comparator stage (14) and controlling the engine control means (18,19) for simultaneously actuating a second parameter adjusting element (19) having a rapid effect on engine operation lasting for only a few combustion cycles and a first parameter adjusting element (18) having a more slowly effective effect on engine operation lasting for a greater number of combustion cycles, said circuit including

a first controller means (15) connected to the comparator (14), and providing an output signal having a first adjustment value which is a function of an input signal received from said comparator (14) and which is applied to one of said parameter adjusting elements;

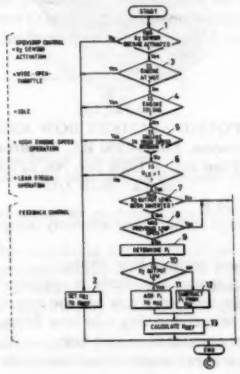
a second controller (16,17) connected to said first controller (15) and providing an output signal having a second adjustment value which is a predetermined function of said first adjustment value which is applied thereto by said first controller (15), said second adjustment value signal being applied to the other parameter adjusting element.

4,542,728

METHOD FOR CONTROLLING FUEL SUPPLY TO INTERNAL COMBUSTION ENGINES HAVING CATALYTIC MEANS FOR PURIFYING EXHAUST GASES, AT OPERATION IN A HIGH SPEED REGION

Yutaka Otobe, Shiki, and Noriyuki Kishi, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1983, Ser. No. 502,105
Claims priority, application Japan, Jun. 15, 1982, 57-102652
Int. Cl.[4] F02B *3/00;* **F01N** *3/20*
U.S. Cl. 123—440 **3 Claims**



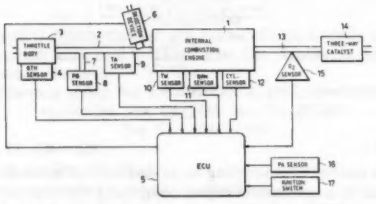
1. A method for controlling the quantity of fuel being supplied to an internal combustion engine having an intake passage and a catalytic means for purifying detrimental ingredients in exhaust gases emitted from the engine, in a feedback manner responsive to an output from a means for detecting the concentration of an ingredient in the exhaust gases so that the air/fuel ratio of an air/fuel mixture being supplied to the engine is controlled to a theoretical mixture ratio, said catalytic means being of the type being apt to most increase in bed temperature when the air/fuel ratio of the air/fuel mixture assumes said theoretical mixture ratio or a value close thereto, the method comprising the steps of: determining whether or not the engine is operating in a predetermined high speed operating region wherein the rotational speed of the engine is higher than a predetermined value which is a maximum value of the rotational speed of the engine above which the bed temperature of said catalytic means will exceed a predetermined maximum allowable value, if the air/fuel ratio of the air/fuel mixture being supplied to the engine is controlled to said theoretical mixture ratio or a value close thereto, and the absolute pressure in said intake passage is higher than a predetermined value; and (2) interrupting said feedback control and increasing the quantity of fuel being supplied to the engine by a predetermined amount, so that the resultant air/fuel mixture being supplied to the engine has an air/fuel ratio richer than said theoretical mixture ratio, when it is determined in said step (1) that the engine is operating in said predetermined high speed operating region, said predetermined amount being set to larger values as the absolute pressure in said intake passage increases.

4,542,729

AIR/FUEL RATIO CONTROL METHOD HAVING FAIL-SAFE FUNCTION FOR ABNORMALITIES IN OXYGEN CONCENTRATION DETECTING MEANS FOR INTERNAL COMBUSTION ENGINES

Akihiro Yamato, and Yutaka Otobe, both of Shiki, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1983, Ser. No. 498,972
Claims priority, application Japan, May 28, 1982, 57-90660
Int. Cl.[4] F02M *7/00;* **F02B** *3/00*
U.S. Cl. 123—440 **3 Claims**



1. A method for controlling the air/fuel ratio of an air/fuel mixture being supplied to an internal combustion engine having a means for detecting oxygen concentration in exhaust gases emitted from the engine, to desired values in such a manner as to correct a basic value of fuel supply quantity for the engine by the use of a first coefficient which has a value thereof variable with a change in the output of said oxygen concentration detecting means, while the engine is operating in a feedback mode control region, and by the use of a second coefficient which is a mean value of values of said first coefficient which have been used during operation of the engine in said feedback mode control region, while the engine is operating in each of a plurality of predetermined particular operating regions other than said feedback mode control region, the method comprising the steps of: (1) comparing the value of said second coefficient with a predetermined upper limit and with a predetermined lower limit, said predetermined upper

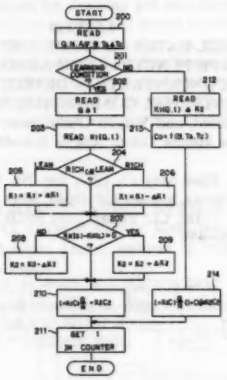
limit and said predetermined lower limit being, respectively, an upper limit and a lower limit of values of said first coefficient that can be assumed while said oxygen concentration detecting means is functioning normally when said engine is operating in a normal operating condition, (2) setting the value of said second coefficient to a predetermined value intermediate between said predetermined upper limit and said predetermined lower limit and controlling the air/fuel ratio of the air/fuel mixture being supplied to the engine by the use of said predetermined value as said second coefficient, when it is determined in the step (1) that the value of said second coefficient is either larger than said predetermined upper limit or smaller than said predetermined lower limit, while said engine is operating in said each of said predetermined particular operating regions, thereby enabling positive continuation of the operation of the engine without causing stoppage of the engine.

4,542,730

METHOD AND APPARATUS FOR CONTROLLING AIR-FUEL RATIO OF MIXTURE FOR COMBUSTION ENGINES

Shiro Nagasawa, Kariya; Naruaki Morimoto, Anjo; Toshio Fujimura, Kariya; Masayuki Itoh, Chita, and Shinya Taniguchi, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 11, 1984, Ser. No. 629,969
Claims priority, application Japan, Sep. 21, 1983, 58-175125
Int. Cl.⁴ F02M *17/00*
U.S. Cl. 123—489 **5 Claims**



1. A method of controlling an air-fuel ratio of mixture to be supplied to a combustion engine comprising the steps of:

storing a plurality of first correction values and a second correction value in a memory, said first correction values being stored in storage locations of said memory addressable by two predetermined parameters;

sensing an intake condition of said combustion engine, said second intake condition being used as one of said two predetermined parameters for addressing said memory;

sensing an air-fuel ratio of mixture supplied to said combustion engine;

correcting, in response to said sensed air-fuel ratio, one of said first correction values stored in one of said storage locations corresponding to said second intake condition and the other of said two predetermined parameters;

correcting said second correction value in response to a difference between said first correction values stored in said storage locations corresponding to the same sensed intake condition;

newly storing said corrected one of said first correction values and said corrected second value in said memory in place of said one of first correction values and said second correction value, respectively;

determining a fuel injection time by adding a first time dependent on said sensed intake condition and a second time independent of said sensed intake condition, said fuel injection time being used as the other of said two predetermined parameters for addressing said memory, said first time and said second time being proportional to said corrected one of said first condition values and said corrected second correction value, respectively; and

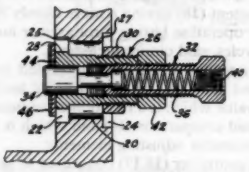
injecting fuel into said combustion engine during said determined fuel injection time.

4,542,731

BOW WITH VERTICALLY AND HORIZONTALLY ADJUSTABLE ARROW SUPPORT

Miguel A. Quartino, St. Louis, Mo., assignor to Hoyt/Easton, Bridgeton, Mo.

Filed Apr. 4, 1983, Ser. No. 481,932
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—24 R **3 Claims**



1. In an archery bow, a handle section, a vertically elongated aperture extending horizontally through said handle section from side to side, an elongated hollow arrow rest support member extending through said aperture, said support member being movable vertically in said aperture and said aperture and said support member having contiguous vertical and opposite side surfaces thereon for guiding said support member vertically in said aperture, an enlarged head portion at one end of said elongated support member and an externally screw threaded portion at the other end thereof, a nut on said screw threaded portion which when tightened causes said enlarged head portion to bear against one side of said handle section and said nut to bear against the opposite side thereof to clamp said support member in a vertically adjusted position, an arrow rest mounted on the outer surface of said enlarged head portion, and an elongated, spring biased adjustable arrow spacing member mounted for longitudinal adjustment in said elongated hollow arrow rest support member so as to vary the protrusion of said member from the outer surface of said enlarged head portion.

4,542,732

COMPOUND ARCHERY BOW ASSEMBLY

Vincent F. Troncoso, 14090-6100 Rd., Montrose, Colo. 81401

Filed Jul. 2, 1984, Ser. No. 627,203
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—24 R **13 Claims**

1. A compound archery bow assembly comprising, in combination:

a. a compound archery bow having

i. a pair of spaced bow limbs at opposite ends thereof,

ii. a handle with an arrow rest on one side thereof, said handle interconnecting said bow limbs,

iii. pulleys connected to said limbs,

iv. pulley cables trained around said pulleys and spanning said bow and,

v. a bowstring connected to said cables;

b. a cable guard secured to said handle and deflecting said

cables laterally out of alignment with said rest to increase arrow vane clearance;

c. a cable slide guide connected to said cable guard and guiding said cables around said guard; and,

d. an arrow drawcheck comprising

i. an activator component means for actuating a device to indicate to a user that the bowstring is at a proper draw, said activator component means being releasably connected to one of said bow cables adjacent said slide guide, said one of said cables being movable generally in a path toward said slide guide and toward at least one of said bow links during drawing of said bowstring, bearing said activator component with it and

ii. a drawcheck indicator component means connected to said slide guide and activatable by contact with said activator component to indicate to a user a predetermined full draw position of said bowstring.

4,542,733

PORTABLE GAS FIRED BARBECUE

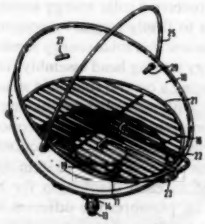
Ming K. Chan, 1st Floor, 58 Hung To Rd., Kowloon, Hong Kong

Filed Sep. 14, 1983, Ser. No. 532,272

Claims priority, application United Kingdom, Sep. 16, 1982, 8226405

Int. Cl.[4] A47J *37/00*; F24C *3/00*

U.S. Cl. 126—41 R **4 Claims**



1. A portable barbecue comprising:

a part-spherical bowl provided at its lower part with a gas burner,

means for connecting the gas burner to a source of gas under pressure,

valve means for regulating the supply of gas to the burner,

a first grid supported within the bowl and located above the gas burner for supporting a heatable substance,

a second grid supported by the bowl and spaced above the first grid, and,

means for positioning the grids such that the second grid can be located in alternative positions in the bowl, said positioning means including a handle provided on the second grid and being slidable between an outer position used for lifting the second grid and an inner position in which part of the handle engages in a slot provided in the wall of the bowl to hold the grid in position.

4,542,734

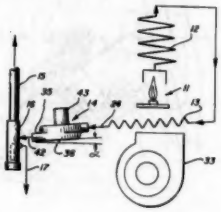
HIGH EFFICIENCY FURNACE WITH SECONDARY HEAT EXCHANGER

Bryan O. Trent, Smyrna, and Ronald S. Tomlinson, Nashville, both of Tenn., assignors to Heil-Quaker Corporation, Lewisburg, Tenn.

Filed Sep. 6, 1983, Ser. No. 529,471

Int. Cl.[4] F24H *3/02*

U.S. Cl. 126—110 R **17 Claims**



1. In a domestic forced-air furnace having a hydrocarbon fuel burner, the improvement comprising:

heat exchanger means for receiving the products of combustion from said burner, said heat exchanger means being arranged to extract sufficient heat from the combustion products to cause the formation of condensate therein and being further arranged to pass substantially all of said condensate therethrough;

induced draft blower means; and

means for connecting the heat exchanger means to the blower means to pass all of the combudtion products and condensate from the heat exchanger means to the blower means, said blower means passing all of the combustion products and condensate therethrough.

4,542,735

GAS FIRES

Kenneth G. Smith, Cuffley, and John Collings, London, both of England, assignors to Thorn Emi Gas Appliances Limited, London, England

Continuation of Ser. No. 538,898, Oct. 4, 1983, abandoned. This application Jan. 18, 1985, Ser. No. 692,862

Int. Cl.[4] F24C *3/00*

U.S. Cl. 126—129 **7 Claims**

1. A gas fire including:

an open-fronted combustion chamber,

a fire bed arranged within the combustion chamber,

simulated solid fuel supported on the fire bed and arranged to provide a desired visual effect,

a gas burner arranged adjacent to the front of the fire bed and disposed to direct flames at the fire bed and the simulated solid fuel,

and a heat exchanger unit for heating ambient air to receive combustion products associated with said flames and to utilise the products to heat the ambient air, said unit having an inlet for combustion products adjacent the rear of the fire bed,

wherein at least selected portions of said simulated solid fuel are formed with internal passageways, said passageways opening towards said flames and having means provided to guide said combustion products generally along the fire bed to the inlet, wherein some simulated fuel portions are provided with an inner V-shaped surface to guide combustion products around the interior of said respective portion, the inner V-shaped surfaces comprising, or at

least providing a part of, said shaped interior surface of the fuel, the combustion products heat interior surfaces of the

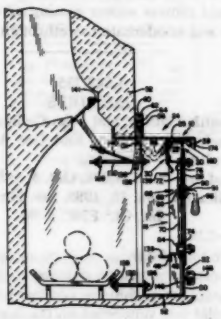
solid fuel through which they pass causing it to glow and are constrained to remain in the vicinity of said fire bed along their entire path from said gas burner to said inlet.

4,542,736

FIREPLACE CAP WITH PREHEATED SECONDARY AIR SUPPLY

Philip E. Scheler, Rte. 1, Western Heights, #12, Baker, Oreg. 97814

Continuation-in-part of Ser. No. 452,025, Dec. 21, 1982, Pat. No. 4,508,098. This application Dec. 17, 1984, Ser. No. 682,337
Int. Cl.⁴ F24C *15/04*
U.S. Cl. 126—139 **21 Claims**



1. A fireplace cap for a fireplace with a firebox and a fireplace opening leading to the firebox comprising:

an upright frame means having first and second side members, a lower damper cross member and an upper header cross member, said frame means defining a fireplace cap opening and being adapted for mounting to the front of a fireplace so as to permit insertion of fuel through the cap and fireplace opening and into the firebox of the fireplace;

at least one door mounted to the frame means and movable from a first position closing the cap opening to second positions opening the cap opening;

latching means for selectively holding the door in a closed position;

secondary air preheat chamber means extending transversely across an upper region of the cap and above the door, the secondary air preheat chamber means having secondary air inlet means for receiving secondary air and

secondary air outlet means communicating with the firebox of the fireplace for delivery of preheated secondary air from the secondary air preheat chamber means to the firebox;

secondary air valve means for controlling the flow of secondary air through the secondary air chamber means; and

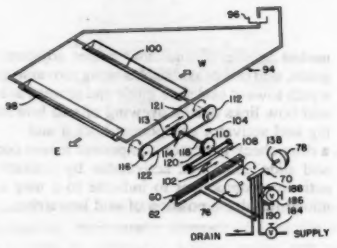
primary combustion air supply means for selectively delivering primary combustion air therethrough to a lower region of the firebox.

4,542,737

COMBINED PRESSURIZED AIR SOLAR HEAT SENSING HEAD ASSEMBLY AND A PRESSURIZED WATER DRIVE SYSTEM USED TO MOVE SOLAR ENERGY COLLECTORS IN TRACKING THE SUN

Kenneth G. Wood, 4417 Evanston Ave. N., Seattle, Wash. 98103

Continuation-in-part of Ser. No. 310,230, Oct. 9, 1981, abandoned. This application May 1, 1984, Ser. No. 606,844
Int. Cl.⁴ F24J *3/02*; F16H *29/02*; F01B *19/00*; G01J *1/20*
U.S. Cl. 126—425 **3 Claims**



1. A sun tracking solar energy collector assembly, comprising:

(a) a continuous frame assembly having bearings to rotatably receive tiltable solar energy collectors for their east to west movement and return, a pivotal means to adjust these collectors for their seasonal angles of inclination, a bearing located between the bearings supporting these collectors, to rotatably receive a solar energy sensing head assembly, and fasteners to firmly support a pressurized water drive system just below this solar energy sensing head assembly;

(b) a solar energy sensing head assembly rotatably secured to the frame having a central sunshield structure, pressurized air chambers with each chamber having a diaphragm and being supported immediately on opposite sides of the sunshield structure, and a valve secured to the sunshield structure with its movable valve stem immediately operatively related to each diaphragm for translating movement, when air pressures are different in the pressurized air chambers because of differences in the solar energy being absorbed;

(c) a solar energy collector driving system fastened to the frame and having adapters to connect to a pressurized water source, a water distributor assembly to direct water from a pressurized water source through the valve of the solar energy sensing head, and beyond to one side or the other of a water powered actuator, the water powered actuator in turn connected to a power transmission, the power transmission in turn connected to the solar energy sensing head assembly and connected to tiltable solar energy collectors; and

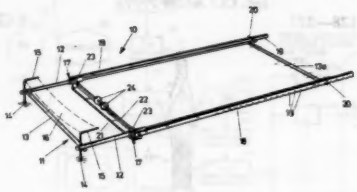
(d) solar energy collectors tiltably and pivotally secured to the frame to be tilted from east to west and returned during a twenty four hour period and to be inclined periodically throughout the seasons of the year.

4,542,738

APPLIANCE

Lionel R. Willott, 15 Farrell Dr., Tugun Qld. 4224, Australia

Filed May 3, 1983, Ser. No. 491,029
Claims priority, application Australia, Jun. 17, 1982, PF4475
Int. Cl.⁴ A61H 7/00
U.S. Cl. 128—67 9 Claims



1. A massage appliance having a support frame adapted to be located adjacent the back of a user for supporting the user in a prone position and having pressure applying means mounted for movement relative to the support frame along the spine of the user and further comprising:

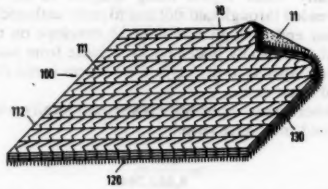
a pair of spaced apart side rails between which the back of the user is adapted to be positioned, a carriage on each said side rail, a pressure applying assembly carried by and disposed between said carriages for supporting said pressure applying means, and a pair of handles each connected to a respective said carriage and arranged adjacent said rails, each said handle having a plurality of spaced locating notches each engageable with a respective locating means fixed to said rails to selectively position said pressure applying means in a step wise manner relative to said frame.

4,542,739

WOUND TEXTILE

Ewald Schäfer, Wolfstein, and Harald Jung, Kreimbach-Kaulbach, both of Fed. Rep. of Germany, assignors to Firma Karl Otto Braun Kg, Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 458,807
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1982, 3213673
Int. Cl.⁴ A61F 13/00
U.S. Cl. 128—156 4 Claims



1. A multiple-layer, woven, flat wound textile comprising:

a smooth hydrophobic cover layer having an exposed surface adapted to face a wound without sticking thereto, being permeable to secretions from the wound, and including loops of synthetic, hydrophobic threads; and

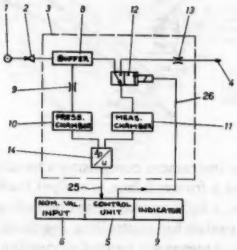
a roughened, hydrophilic second layer adapted to be separated from the wound by the cover layer, said second layer including a filling formed of hydrophilic threads for drawing secretions through the cover layer from the wound, the hydrophilic threads on the surface of the second layer opposite the cover layer exposed surface being roughened to increase the absorbency thereof.

4,542,740

GAS DOSING DEVICE FOR MEDICAL APPARATUS

Lothar Kleinschmidt, Krummesse; Carl F. Wallroth, and Heye Harms, both of Lubeck, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 513,066
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 3229328
Int. Cl.⁴ A61M 16/00
U.S. Cl. 128—204.21 4 Claims



1. A gas dosing device for medical apparatus, comprising:

a gas supply source (1);

a pressure reducer (2) having an input connected to said gas supply source, and an output;

at least one dosing unit (3) having a buffer (8) with an input connected to said pressure reducer output, a first output and a second output;

said dosing unit including a pressure chamber (10) connected to said first output of said buffer with a first throttle (9) on said first output of said buffer for throttling gas supplied from said buffer to said pressure chamber, and a reversing valve (12) having an input connected to said second output of said buffer, an output and a reversing connection for receiving and discharging gas, said reversing valve having a first position for passing gas from said buffer second output to said reversing connection, and a second position for passing gas from said reversing connection to said reversing valve output;

said dosing unit including a measuring chamber (11) connected to said reversing connection for receiving and discharging gas to and from said reversing connection, and a differential pressure transducer (14) connected to said pressure chamber and to said measuring chamber for generating a signal corresponding to a difference of pressure between said pressure chamber and said measuring chamber;

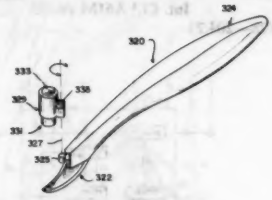
control means (5) connected to said differential pressure transducer and to said reversing valve for controlling said reversing valve to move said valve into said second position thereof when said signal from said transducer indicates an equality of pressures in said pressure chamber and said measuring chamber, and for moving said reversing valve into said first position thereof when said signal from said transducer indicates a selected difference in pressure between said pressure chamber and said measuring chamber, said control means including a control unit connected to said transducer and to said reversing valve for controlling said reversing valve, a nominal value input connected to said control unit for setting the selected pressure difference between said pressure chamber and said measuring chamber; and

said dosing unit including a unit outlet (4) connected to said reversing valve outlet for supplying dosed gas.

4,542,741
SURGICAL INSTRUMENT WITH INCORPORATED LIGHTING SYSTEM

Kermit H. Burgin, R.R. #1, Box 334, Whitestown, Ind. 46075

Continuation of Ser. No. 284,506, Jul. 17, 1981, abandoned. This application Nov. 16, 1983, Ser. No. 552,323
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—303.1 4 Claims

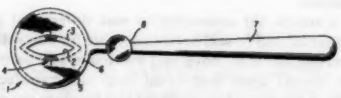


4. A surgical instrument comprising a handle portion having a long axis and a forward face, a scalpel blade molded to the handle portion, a light source means including a battery pack, a bulb, and a switch for controlling the illumination from the light source, and means for pivotally coupling the light source to the handle portion comprising a generally right circular cylindrical projection provided on the forward face of the handle portion, the cylindrical projection having an axis generally normal to the long axis of the handle portion, and a generally right circular cylindrical collar provided on the light source, the collar being selectively engageable with the projection to enable the light source to rotate about the axis of the projection.

4,542,742
HEMOSTATIC ELLIPSE GUIDE FOR CUTTING SKIN

Jeffry Winkelman, and Janee D. Steinberg, both of 8709 Banyan Ct., Tamarac, Fla. 33321

Filed Dec. 5, 1983, Ser. No. 557,865
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—325 7 Claims



1. A surgical hemostatic cutting guide for a surgical knife comprising a circular plate having an upper and lower side and provided with an elliptical debossed pattern centrally located on said plate and a circular debossed pattern located circumferentially of said plate and having an inclined handle which is provided with a circular knurled thumb rest, both of said debossed patterns being located on the lower side of said plate and an elliptical opening located centrally in said plate inside of said elliptical debossed pattern, said elliptical opening forming an elliptical guiding edge along which a surgical blade can rest while cutting.

4,542,743
VASCULAR CLAMP

David C. Dunn, Cambridge, and David Scarrow, Somerset, both of England, assignors to DRG (UK) Ltd., Bristol, England

Continuation of Ser. No. 262,667, May 11, 1981, abandoned. This application Jul. 28, 1983, Ser. No. 517,931
Claims priority, application United Kingdom, May 14, 1980, 8015978
Int. Cl.[4] A61B *17/12*
U.S. Cl. 128—327 6 Claims

1. A vascular clamp for occluding a single blood vessel or the like during surgery, said vascular clamp comprising:

an elongated hollow body in the form of a flat envelope of impermeable flexible sheet material, which can be curved to embrace said blood vessel intended to be occluded by said vascular clamp;

an inlet tube at one end of said envelope for selective inflation of the envelope to occlude said vessel embraced by said envelope;

a transverse strip of material secured to the edges of said envelope spaced a predetermined distance from said one end such as to provide a slot between said strip and said envelope through which the other end portion of the body remote from said one end can be threaded;

a first locally wider region of said envelope disposed intermediate said strip and said other end of the envelope, said locally wider region being adapted to be selectively threaded through said slot and to resist unthreading of said other end through said slot, the envelope on the said of said first locally wider region remote from said one end being tapered so that its width reduces in the direction of said other end;

and wherein said envelope has a second locally wider region at said transverse strip.

4,542,744
METHOD AND APPARATUS FOR REMOTE TISSUE IDENTIFICATION BY STATISTICAL MODELING AND HYPOTHESIS TESTING OF ECHO ULTRASOUND SIGNALS

Casper W. Barnes, Newport Beach, and Farhad Towfiq, Dana Pt., both of Calif., assignors to North American Philips Corporation, New York, N.Y.

Filed Mar. 23, 1983, Ser. No. 478,172
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 60 Claims

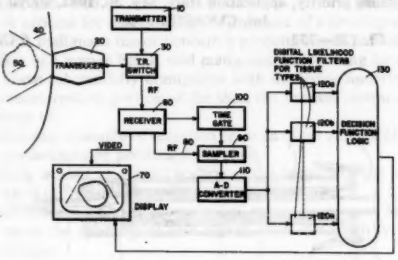
1. A method for remote identification of a tissue using ultrasound, comprising the steps of:

directing ultrasound energy into an unknown tissue;

measuring values of a characteristic of echoes of the ultrasound which are scattered from the unknown tissue;

accumulating a statistically significant sample of the measured values of the characteristic;

filtering the accumulated sample to determine, for each of a plurality of predetermined mathematical models, each of which is associated with a possible tissue type, a signal which is a measure of the likelihood that the accumulated



sample of measured values was generated by said mathematical model;

applying the the filtered signals as inputs of a predetermined logical decision function which selects one of the models which most likely produced the sample; and

assigning the tissue type which is associated with the chosen model as the identity of the unknown tissue.

4,542,745

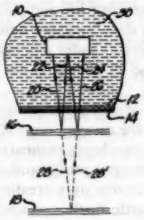
ULTRASONIC EMULSION FLUIDS

Clyde G. Oakley, Lewistown, Pa.; Joe F. Guess, Littleton, Colo.; Cheston W. Robbins, Englewood, Colo.; Robert M. Kelly, Denver, Colo.; Dean N. Skaar, Aurora, Colo., and Stephen D. Walker, Englewood, Colo., assignors to Technicare Corporation, Solon, Ohio

Filed Jun. 27, 1983, Ser. No. 508,362

Int. Cl.[4] B01J *13/00*

U.S. Cl. 252—312 **16 Claims**



1. An ultrasonic emulsion fluid suitable for use in an ultrasonic probe for coupling ultrasonic energy between an ultrasonic transducer and human tissue comprising:

a suspended oil phase of droplets exhibiting an average diameter in the range of 0.15 microns to 1.5 microns for providing a given attenuation characteristic to ultrasound over a predetermined band of ultrasonic frequencies; and

an emulsion outer phase of water and a velocity enhancer, said velocity enhancer being chosen so that the velocity of ultrasound in said fluid will closely approximate the velocity of ultrasound in human tissue.

4,542,746

ULTRASONIC DIAGNOSTIC APPARATUS

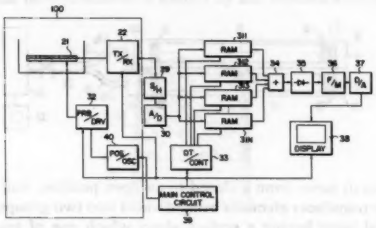
Kinya Takamizawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 24, 1983, Ser. No. 469,315

Claims priority, application Japan, Feb. 24, 1982, 57-28646

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—660 **12 Claims**



1. An ultrasonic diagnostic apparatus for examining an object by utilizing ultrasonic waves, comprising:

ultrasonic probe means including a plurality of ultrasonic transducer elements aligned in a line parallel to a first scanning direction for emitting fan-shaped ultrasonic waves;

first control means for controlling the probe means to electrically scan the object by the fan-shaped ultrasonic waves in said first scanning direction such that a predetermined number of said transducer elements are excited to transmit the ultrasonic waves toward the object and ultrasonic echoes reflected from the object are derived as a plurality of echo signals from the transducer elements after first delay time corrections are given;

first synthesizing means for electrically synthesizing said plurality of echo signals with an in-phase condition so as to derive a plurality of first scanning signals, whereby electrical focusing is achieved in the first scanning direction;

means for mechanically and intermittently moving the ultrasonic probe means along a second scanning direction perpendicular to the first scanning direction so as to obtain said first scanning signals at given scanning positions over the second scanning direction;

memory means for storing said plurality of first scanning signals derived from the first synthesizing means;

second control means for controlling the memory means to read out said plurality of first scanning signals with second delay time corrections; and

second synthesizing means for electrically synthesizing said plurality of first scanning signals with an in-phase condition so as to derive a plurality of second scanning signals, whereby electrical focusing is achieved in the second scanning direction.

4,542,747

ULTRASONIC APPLICATOR FOR BIOPSY

Viktor Zurinski; Ivan Lucic, both of Erlangen, and Karlheinz Barthelmes, Baiersdorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,500

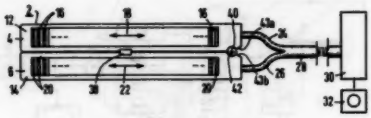
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244667

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—660 **20 Claims**

1. In an ultrasonic applicator for the ultrasonic examination of an object, having an extended carrying body, which has an application surface to be directed to the object and, in the vicinity of this application surface, a number of ultrasonic

transducer elements, which are arranged parallel to one another along the longitudinal axis of the carrying body, and with a guide channel in the carrying body which extends toward the application surface and is intended to receive a biopsy needle, the improvement comprising said carrying body being made up of two extended partial bodies each of which has a guide groove on one side, the two extended bodies being connected at a means for permitting the two extended partial



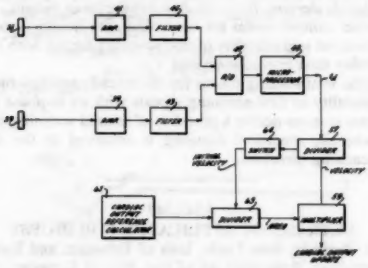
bodies to move from a closed to an open position, said ultrasonic transducer elements being divided into two groups, each partial body having a surface along which one of said two groups of ultrasonic transducer elements is arranged, both partial bodies being positioned with respect to one another in such a manner that in the closed position said guide grooves form said guide channel that serves to guide said biopsy needle, and said two partial body surfaces form said application surface.

4,542,748

APPARATUS AND METHOD FOR MEASURING CARDIAC OUTPUT

Rob J. Roy, Clifton Park, N.Y., assignor to American Hospital Supply Corp., Evanston, Ill.

Filed Mar. 7, 1983, Ser. No. 472,931
Int. Cl.[4] A61B 5/02
U.S. Cl. 128—713 **12 Claims**



1. An apparatus for measuring cardiac output using the natural change in phase of variations in blood temperature within the circulatory system, said apparatus comprising:

means for measuring cardiac output to provide a reference value of cardiac output; and

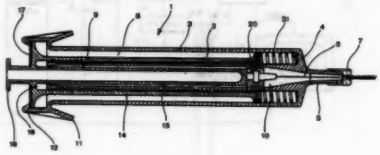
means responsive to the natural change in phase of variations in blood temperature within the circulatory system and the reference value of cardiac output for providing an updated measurement of cardiac output.

4,542,749

SYRINGE FOR USE IN HYPODERMIC BIOPSY, FEATURING AUTOMATIC PLUNGER-RETURN

Ivo Caselgrandi, c/o Gardipatent-605, Via Giardini-Palazzo Pororci, and Beniamino Palmieri, 45, Via Boito, both of, 41100 Modena, Italy

Filed Sep. 28, 1982, Ser. No. 428,115
Claims priority, application Italy, Sep. 30, 1981, 40090 A/81
Int. Cl.[4] A61M 5/00
U.S. Cl. 128—752 **5 Claims**



1. Syringe for hypodermic biopsy incorporating automatic plunger-return and utilizing a hypodermic needle, comprising:

a syringe body having a fore-end and a rear end and including inner and outer coaxial cylindrical elements united integrally at the fore-end of the syringe body and extending thence into a pierced truncate-conical seating lying beyond and disposed coaxially with said cylindrical elements;

a first annular chamber disposed between and defined by said inner and outer cylindrical elements, said chamber having one end enclosed by said syringe fore-end said inner cylindrical cavity located centrally therein, and terminating at its foremost end in a truncate-conical portion which in turn communicates with said seating;

said syringe body housing an axially-movable plunger composed of two coaxial plunger cylinders, the outer plunger cylinder open at its foremost end and enclosed at the remaining rear end by an annular portion; the inner plunger cylinder being enclosed at its foremost end with its rear end extending beyond said annular portion and terminating in a disc; a second annular chamber between said outer plunger cylinder and said inner plunger cylinder the rear end of which is enclosed by said annular portion;

the foremost end of said inner plunger cylinder offering a fixing-point for the moving core of a hypodermic needle; the base of said core being ensheathed by a packing exhibiting an undercut outer profile and designed to slide within said cylindrical cavity, duly creating an airtight and fluid-tight seal therewith; further comprising means for applying pressure to the foremost end of said outer plunger cylinder so as to cause said plunger to move, coaxially within said syringe body, away from the fore-end of said syringe body, means, comprising a detent at the rear end of said outer cylindrical element, for preventing said means for applying pressure from causing said plunger to move, coaxially within said syringe body, away from the fore-end of said syringe body by releasably engaging said annular portion, and means for disengaging said annular portion from said detent, so that said means for applying pressure causes said plunger to move coaxially within said syringe body, away from the fore-end of said syringe body.

4,542,750

NON-INVASIVE METHOD FOR DIAGNOSING INCIPIENT OR DEVELOPED CANCER TISSUE

Ross C. Ettare, Playa Del Rey, Calif., assignor to Primary Diagnostic Systems, Inc., Santa Clara, Calif.

Filed Aug. 13, 1982, Ser. No. 408,179
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—760 29 Claims

1. A process for determining the presence of a developed or incipient malignant tumor beneath a predetermined portion of the skin of a human being, said malignant tumor being located in a tissue substantially contiguous with the tissue underlying the predetermined portion of the skin, the process comprising the steps of:

collecting a sample of secretion from an outer surface of the predetermined portion of the skin;

testing at least an aliquot portion of the sample for the presence of free amino acids; and

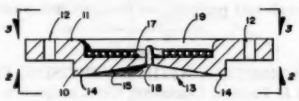
determining whether a malignant tumor is present based upon the quantity of said amino acids detected by said testing.

4,542,751

SWEAT-COLLECTING DEVICE AND METHOD

Henry L. Webster, and Wayne K. Barlow, both of Logan, Utah, assignors to Wescor, Inc., Logan, Utah

Continuation-in-part of Ser. No. 358,012, Mar. 15, 1982, abandoned. This application Jan. 21, 1983, Ser. No. 459,838
Int. Cl.[4] A61B *19/00*
U.S. Cl. 128—760 26 Claims



1. A sweat-collection device for application to a substantially flat area of the human body, comprising a solid body having concave means defined at a face thereof by a sweat-collecting surface which gradually recedes from a rim lying wholly in a common plane to an axial bore that extends to the opposite face of said solid body, the maximum depth of said concave means being such that the skin and flesh of said flat area of a human body to which the device is applied will bulge into contact with said sweat-collecting surface over substantially the entire area thereof when said rim is placed firmly against the skin of said flat area of the human body, leaving substantially no dead space in the interface between the bulged skin and said sweat-collecting surface, whereby body secretion pressure of sweat will force said sweat through said interface to said axial bore, said bore being adapted to connect with a length of flexible, sweat collector tubing at said opposite face of the solid body, and said solid body being adapted to be fastened against the said flat area of a human body so as to maintain firm placement of said rim and sweat-collecting surface against the skin.

4,542,752

IMPLANTABLE DEVICE HAVING POROUS SURFACE WITH CARBON COATING

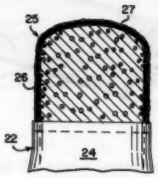
Abel DeHaan, Pembrook Pines, and David C. MacGregor, Miami, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Apr. 22, 1983, Ser. No. 487,460
Int. Cl.[4] A61N *1/04*
U.S. Cl. 128—784 27 Claims

1. A device or appliance that is implantable in organic tissue, comprising:

an electrically conductive shaped element having a shaped substrate member that is electrically conductive and porous to provide a convoluted surface for enhancing organic tissue ingrowth thereinto; and

a low impedance carbon coating over said electrically conductive porous shaped substrate member, said low impedance carbon coating having a carbon lattice structure, said carbon lattice structure being a plasma deposit of carbon laid down on a generally molecular level, said carbon lattice structure providing a porous surface that had been substantially shaped by and conformally coated



onto said convoluted surface of the electrically conductive porous shaped substrate member; wherein

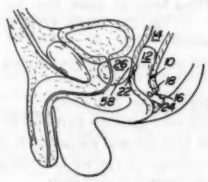
said low impedance carbon coating lattice structure plasma deposit having been laid down by subjecting said electrically conductive porous shaped substrate member to a gaseous environment including a hydrocarbon and energizing the gaseous environment to degrade the hydrocarbon into carbon and hydrogen and to form said carbon lattice structure.

4,542,753

APPARATUS AND METHOD FOR STIMULATING PENILE ERECTILE TISSUE

Henry S. Brenman, Cinnaminson; Philip Katz, Princeton Junction, both of N.J., and Harold L. Schwartz, King of Prussia, Pa., assignors to Biosonics, Inc., Philadephia, Pa.

Filed Dec. 22, 1982, Ser. No. 452,119
Int. Cl.[4] A61N *1/04, 1/36*
U.S. Cl. 128—788 21 Claims

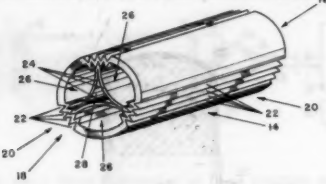


1. A stimulator fur use in promoting penile erection by neural stimulation, comprising a body member adapted for insertion into the rectum of a user, said body member being so shaped as to closely conform to the topological configuration of the rectum of a specific user from the anal area to a site adjacent to the prostate gland, said body member having a cavity therein, electrical signal generating means disposed in said cavity, and a plurality of electrodes disposed on the outer surface of said body member and operatively coupled to said signal generating means, at least one of said electrodes being juxtaposed to a selected neurally sensitive spot on the prostate gland of the user when said body member is operatively disposed so as to apply electrical stimulation to the sensitive spot.

4,542,754
FILTERED CIGARETTE

Daniel V. Cantrell, Prospect, and Robert R. Johnson, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Dec. 5, 1983, Ser. No. 558,220
Int. Cl.[4] A24D *3/04*
U.S. Cl. 131—336 11 Claims



1. A cigarette comprising:
a generally cylindrically shaped tobacco column;
a generally cylindrically shaped hollow tubular section located in coaxial abutment to one end of the tobacco column, the wall of the tubular section being impermeable;
a plurality of grooves formed in the periphery of the tubular section extending generally longitudinally of the tubular section and being open to at least one end of the tubular section;
a generally cylindrically shaped filter rod located in coaxial abutment with the tubular section in gas flow communication with the grooves of the tubular section; and,
tipping material circumferentially surrounding the tubular section and the filter rod, and overlapping a portion of the tobacco column adjacent the tubular section, the tipping material being permeable.

4,542,755
DRY-FORMING OF RECONSTITUTED TOBACCO AND RESULTING PRODUCT

William A. Selke, Atlanta, and William F. Cartwright, Roswell, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 25, 1984, Ser. No. 613,922
Int. Cl.[4] A24B *3/14, 9/00*
U.S. Cl. 131—370 15 Claims

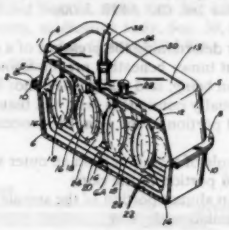
1. A method of forming reconstituted tobacco comprising the steps of:
(a) providing tobacco particles;
(b) entraining said tobacco particles in a gas medium;
(c) directing said gas and entrained tobacco particles onto a moving foraminous carrier to form a web; and
(d) adhesively bonding said web.

11. A method of forming reconstituted tobacco comprising the steps of:
(a) providing a mixture of tobacco particles selected from the group consisting of lamina particles, fines and fiberized stems having a high aspect ratio,
(b) adding to said mixture a minor amount of cellulose fibers,
(c) entraining said mixture and cellulose fibers in an air stream,
(d) directing said airstream containing said mixture and fibers onto a moving foraminous collecting surface to form a web,
(e) adding an adhesive to said web selected from the group consisting of starches and natural and synthetic gums and mixtures thereof, and
(f) bonding said web by means of said applied adhesive.

4,542,756
PORTABLE NON-POWERED DISHWASHER

James Gibson, Rte. 1, Box 183-B, Eunice, La. 70535

Filed Oct. 22, 1984, Ser. No. 663,397
Int. Cl.[4] B08B *3/04*
U.S. Cl. 134—177 1 Claim

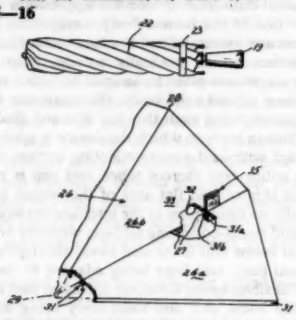


1. A non-powered portable dishwasher comprising:
A. a substantially deep bottom base member adapted for supporting an array of dishes to be washed;
B. a lid member adapted to sealingly enclose said dishes within said bottom base member;
C. means for supplying a flow of water under pressure fluidly connected to said dishwasher; and
D. a plurality of bladder members having expansion capability supported intermediate said dishes, fluidly connected to said water, having perforations therein, said bladder members arranged, when expanded, to simultaneously contact the dishes and spray water onto the dishes through said perforations to scrub and wash the dishes.

4,542,757
UMBRELLA WITH ADVERTISING FLAG

Bradford E. Phillips, Cincinnati, Ohio, assignor to 'totes' incorporated, Loveland, Ohio

Filed Apr. 20, 1983, Ser. No. 486,708
Int. Cl.[4] A45B *25/30;* G09F *3/00*
U.S. Cl. 135—16 1 Claim



1. An umbrella comprising
a centerpost,
an umbrella cover connected to said centerpost, said cover comprising a series of gores, two of said gores adjacent one to the other being stitched together along a stitch line to form a pair of selvage edges extending inwardly of said cover so that said two adjacent gores present a generally smooth exterior surface appearance when said umbrella is open,
a rib structure connected to the centerpost and to the umbrella cover, the rib structure being operable by a user to erect the cover into a cover open position and to collapse the cover into a cover closed position, the cover forming folds which are wrapped around the centerpost when the cover and rib structure are collapsed against the centerpost in the cover closed position,
a closure strap fixed to said cover, said closure strap surrounding said cover exteriorly of said folds for holding

said folded cover and rib structure collapsed against the centerpost, and

an advertising flag connected to said cover between said adjacent gores, said advertising flag extending inwardly of said cover between said selvage edges so that said flag is stitched to said cover by the same stitch line that stitches said adjacent gores together, said advertising flag having a substantial portion extending outwardly of said cover that is adapted to carry an advertising message for view by a casual observer of said umbrella cover when said umbrella cover is in use in the cover open position, said outwardly extending portion of the advertising flag being sized so that the advertising flag extends generally upwardly from said cover when said umbrella cover is in the cover open position and further being sized and positioned on said cover so that said outwardly extending portion of the advertising flag is hidden from view between the folds of said cover when said cover is folded and held in said cover closed position by said closure strap.

4,542,758

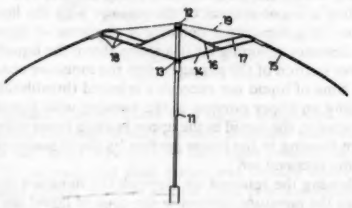
UMBRELLA

Toshio Okuda, Hirakata, Japan, assignor to Ming Nan Wu, Hsin Chu, Taiwan

Continuation of Ser. No. 205,387, Nov. 10, 1980, abandoned. This application Jul. 5, 1983, Ser. No. 510,951

Int. Cl.⁴ A45B *19/10*

U.S. Cl. 135—25 R **12 Claims**



1. An umbrella comprising: an elongate rectangular shaped fixed capstan and an elongate rectangular shaped sliding capstan; an elongate member passing between said fixed capstan and said sliding capstan; and more than two arms pivotally coupled to the peripheries of said fixed capstan and said sliding capstan and movable between an open position and a closed position, at least selected ones of said arms extending from their points of attachment on said capstans toward the opposing peripheries of said fixed capstan and said sliding capstan when in the closed position, two of said arms being pivotally coupled to said capstans more closely to said elongated member than the remaining ones of said arms and said two arms being pivotally coupled on opposite peripheries of said capstans; and further comprising grooves located in the fixed capstan and the sliding capstan, said grooves being arranged to receive ends of the arms, which grooves extend from each of the longer sides of the fixed capstan and the sliding capstan to the respective opposite longer sides with the grooves of one longer side lying alternately with the grooves of the opposite longer side.

4,542,759

PORTABLE SHELTER

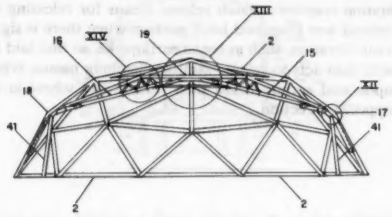
Paul R. Kyner, Jr., R.D. 3, Box 3263, Berwick, Pa. 18603

Filed Sep. 22, 1982, Ser. No. 421,161

Int. Cl.⁴ E04B *1/32*; A45F *1/16*

U.S. Cl. 135—102 **20 Claims**

1. A shelter comprising a plurality of structural elements connected together at apecis to form a geodesic dome type structure having the shape of a semi-ellipsoid, and a substantially planar door opening extending substantially in a plane passing through the greatest axis of the semi-elllipsoid, said greatest axis being substantially horizontal to the ground and lying in said plane, said door opening extending upwardly from said axis at an angle outwardly with respect to said structure and passing substantially through a plurality of said apecis to



form an overhang at the upper portion of the doorway opening, so that said doorway opening is self-supported without vertical supports and substantially equal to the width of said structure at the bottom and accommodates maximum size objects in relation to the size of the structure.

4,542,760

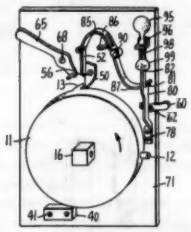
EARTHQUAKE RESPONSIVE DEVICE FOR AUTOMATICALLY SHUTTING OFF GAS OR WATER OR ELECTRICITY OR THE LIKE

Edmond Flauiani, 433 40th Ave., San Francisco, Calif. 94121

Filed Sep. 29, 1983, Ser. No. 537,169

Int. Cl.⁴ F16K *17/36*

U.S. Cl. 137—45 **12 Claims**



1. An earthquake-responsive shut-off device for a controlling shut-off valve having a valve-controlling rotary stem, comprising:

a rotary wheel having a hub portion for direct engagement with a said stem for rotation thereof and having a projecting member extending out from its periphery,

a support plate having an opening through which said hub portion can be engaged with a said stem,

spring means with one end secured to said plate and the other end secured to said wheel for building up force upon rotation of said wheel in one rotary direction to a latching position and releasing said force upon release from the latching portion, thereby rotating said wheel in the opposite direction,

first latching means rotatably secured to said plate at a first axis and having a latch on one side of said axis for latching by engagement with said projecting member upon manual rotation of said wheel in said one direction to said latching position,

second latching means rotatably secured to said plate at a second axis and having first and second arms, said first arm being engaged and rotated by said first latching means when said projecting member engages and is latched by said latch,

a latch arm having a base secured in a stationary position to said plate adjacent to said second latching means and having a latch portion engaged by said second arm when said second latching means is engaged and rotated by said first latching means, so that said second arm is then latched to said latch portion, and

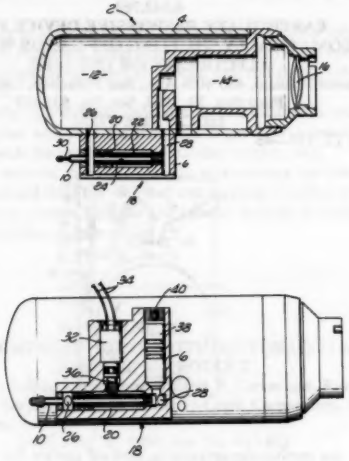
vibration-responsive latch release means for releasing said second arm from said latch portion when there is significant vibration, such as by an earthquake, so that said first arm then acts to release said first latching means, whereupon said spring means then rotates said wheel in said opposite direction.

4,542,761

FLUID DELIVERY SYSTEM

Richard D. Scott, Northridge, Calif., assignor to HR Textron Inc., Valencia, Calif.

Filed Jul. 11, 1983, Ser. No. 512,830
Int. Cl.⁴ F16K *13/06*
U.S. Cl. 137—68 A **9 Claims**



1. A fluid delivery system comprising:

a chamber for receiving fluid under pressure;

a passageway for connecting said chamber to a using apparatus;

first tube means defining a first flow path coupled to said chamber;

second tube means defining a second flow path coupled to said passageway;

said tube means being disposed one within the other to define an inner and outer tube means, said outer tube means being of malleable metallic material and said inner tube means being of brittle frangible metallic material having a reduced wall thickness portion;

means for blocking opposite ends of each of said tube means for normally preventing communication between said flow paths; and

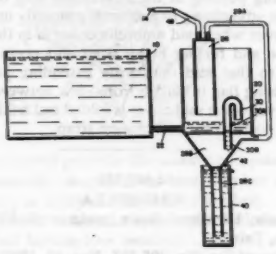
means for applying force to said tube means sufficient to simultaneously bend said outer tube and to fracture said inner tube means only at said reduced wall thickness portion and to establish communication between said flow paths.

4,542,762

AUTOMATIC LIQUID DELIVERY APPARATUS

Bradner M. Littlehale, 751 Fairmount Ave., Chatham, N.J. 07928

Continuation-in-part of Ser. No. 15,775, Feb. 28, 1979, Pat. No. 4,321,937. This application May 18, 1982, Ser. No. 425,094
Claims priority, application PCT Int'l Appl., Dec. 31, 1981, PCT/US81/01775
Int. Cl.⁴ A01G *25/00*
U.S. Cl. 137—78.3 **12 Claims**



1. A method for automatically delivering a metered amount of a liquid from a source of the liquid to a zone of liquid use having a moisture content through a passage terminating in a dispensing outlet, the method comprising the steps of

(a) filling a lower portion of the passage with the liquid,

(b) providing a moisture detector in the zone of liquid use, the detector retaining air in a space above the liquid in the lower portion of the passage when the moisture content in the zone of liquid use exceeds a selected threshhold level,

(c) filling an upper portion of the passage with liquid from the source, the liquid in the upper portion being prevented from flowing to the lower portion by the pressure exerted by the retained air,

(d) releasing the retained air through the moisture detector when the moisture content in the zone of liquid use is less than the selected threshhold level, thereby allowing the liquid in the upper portion to flow to the lower portion, liquid consequently being delivered to the zone of liquid use through the dispensing outlet, and

(e) refilling the upper portion of the passage more slowly than liquid flows from the upper portion to the lower portion, thereby allowing the space above the liquid in the lower portion to be replenished with air.

4,542,763

BUTTERFLY VALVE ASSEMBLY AND METHOD OF MAKING SAME

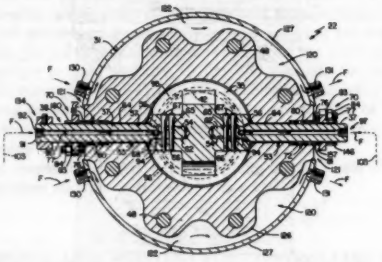
John F. Gardner, Loveland, and Gerald H. Morton, Cincinnati, both of Ohio, assignors to Xomox Corporation, Cincinnati, Ohio

Filed Nov. 4, 1983, Ser. No. 549,200
Int. Cl.⁴ F16K *49/00*
U.S. Cl. 137—340 **31 Claims**

1. In a butterfly valve assembly comprising, a valve body structure having a fluid flow passage therethrough and first sealing surface means, a closure structure for controlling fluid flow through said passage, said closure structure having second sealing surface means adapted to engage said first sealing surface means to prevent fluid flow through said passage and define the closed position of said closure structure, shaft means fastened to said closure structure and extending through said body structure in a fluid-tight relation, packing means between said shaft means and said body structure for providing said fluid-tight relation, said shaft means having a central longitudinal axis, actuating means for moving said shaft means and closure structure between said closed position and an open position thereof, and locking means for locking said shaft

means and closure structure in its closed position, the improvement in which said locking means comprises a latch pin which has a central longitudinal axis and a locking end portion at a terminal end thereof which is adapted to engage said shaft means and provide a positive locking action while maintaining the structural integrity of said shaft means substantially intact, said pin being disposed with its longitudinal axis coplanar with and transverse to said longitudinal axis of said shaft means, and said assembly further comprises multiple purpose means having means supporting said pin and means engaging said packing means to provide compression thereof and assure provision of said fluid-tight relation with said multiple purpose means also having means engaging and supporting said shaft means.

12. In a butterfly valve assembly comprising, a valve body structure having a fluid flow passage therethrough and first sealing surface means, a closure structure for controlling fluid flow through said passage, said closure structure having second sealing surface means adapted to engage said first sealing surface means to prevent fluid flow through said passage and define the closed position of said closure structure, means for



mounting said body structure on a supporting flange therefor, shaft means fastened to said closure structure and extending through said body structure in fluid-tight relation, actuating means for moving said shaft means and closure structure between said closed position and an open position thereof, and substantially annular heat exchange means in said body structure for controlling the temperature thereof, the improvement in which said heat exchange means comprises the outer periphery of said body structure and has practically the entire valve assembly within the confines thereof, said heat exchange means comprising a pair of arcuate heat exchange devices each having a fluid flow channel for receiving a heat transfer fluid therethrough, said heat exchange devices having opposite ends in close proximity to said shaft means, and each of said heat exchange devices has an undulating innermost surface comprising said body structure and a substantially semicylindrical outer surface disposed concentrically therearound with said surfaces defining opposed surfaces of its associated flow channel, said undulating surface being effective in providing a turbulent action and more efficient heat transfer through said undulating surface to said body structure.

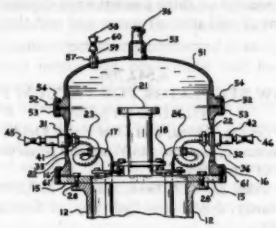
4,542,764

LEAK CONTAINMENT KIT

Donald Brittingham, New Castle, Del.; George P. Fletcher, and Harvey J. Henry, both of Pennsville, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 6, 1983, Ser. No. 529,623
Int. Cl.[4] B61D *5/00*
U.S. Cl. 137—347 **2 Claims**

1. A leak containment kit for a railway tank car comprising an open ended cylindrical main body having on its bottom end an external flange adapted to be attached and sealed to a manway cover on the tank car, a plurality of threaded connectors in the wall of said main body, each adapted externally of the cylindrical main body to connect to a valve and internally to connect to a hollow member which is connected to a tank car loading/unloading valve mounted on said manway cover, a cover having on its open end an external flange adapted to be



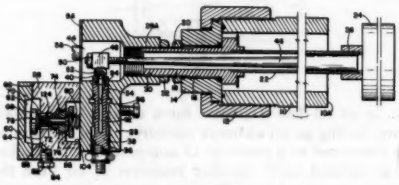
attached and sealed to a flange on the top of the cylindrical main body.

4,542,765

PNEUMATIC LIQUID LEVEL CONTROL HAVING EITHER THROTTLING OF SNAP ACTION

Clarence Glasgow, Tulsa, and Randall W. Alberty, Locust Grove, both of Okla., assignors to Custom Engineering and Manufacturing Corp., Tulsa, Okla.

Filed Sep. 30, 1983, Ser. No. 537,783
Int. Cl.[4] F16K *31/34, 33/00*
U.S. Cl. 137—390 **3 Claims**



1. A pneumatic liquid level control having optionally available either snap action or throttling action in response to liquid level in a vessel, comprising:

a liquid level control body having a gas supply inlet, a control gas outlet, an exhaust port, and having a single nozzle port connected to said gas supply pressure inlet by way of an inlet gas chamber, and a single nozzle closure member actuated by a float means to move said closure member towards and away from said nozzle in response to the level of liquid in a vessel;

a snap action booster having a diaphragm controlled valve;

a first passageway from said gas inlet chamber to said diaphragm whereby said diaphragm control valve is actuated when the pressure in said gas supply chamber exceeds a preselected level;

a manually operated shut off screw in said first passageway which, when closed, deactivates said snap action booster;

a second passageway from said gas supply chamber to said gas control outlet;

a threaded opening in said level control body intersecting said second passageway;

a throttling screw in said threaded opening providing throttling control of gas passing through said second passageway; and

a third passageway from said gas supply chamber to said gas control outlet having said diaphragm controlled valve therein, whereby when said closure member is not in proximate contact with said nozzle port, gas from said gas supply chamber passes freely through said nozzle and out through said exhaust port with a resultant low pressure in said gas supply chamber, however when said nozzle clo-

sure member is in contact or proximate contact with said nozzle, gas pressure increases in said gas supply chamber, which is communicated to said control gas outlet by way of said second or third passageways depending upon the positions of said shut off screw and said throttling screw.

4,542,766

OIL-FLOW REGULATOR FOR VACUUM PUMPS IN MILKING SYSTEMS

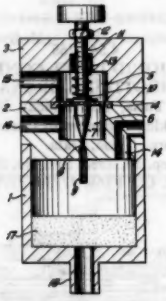
Klaus-Peter Gawer, Ahlen, and Olaf Suhr, Oelde, both of Fed. Rep. of Germany, assignors to Westfalia Separator Ag, Oelde, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,399

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1983, 3315748

Int. Cl.⁴ F16K *37/00*; F16N *23/00*

U.S. Cl. 137—559 **6 Claims**



1. In an oil-flow regulator for a milking system vacuum pump, having an oil chamber receptive of oil through an oil line connected to a reservoir of non-pressurized free-flowing oil, an aerated catch chamber receptive of oil from the oil chamber, an oil line from the catch chamber for connecting to a vacuum pump and valve means for controlling the oil flow from the oil chamber to the catch chamber including a restrictor in communication with the oil chamber and the catch chamber and a valve cone for opening and closing the restrictor, the improvement wherein the valve means comprises a partial vacuum chamber including a diaphragm separating the partial vacuum chamber from the oil chamber, means connecting the valve cone to the diaphragm for up and down movement therewith toward and away from the restriction, means biasing the diaphragm and valve cone towards the restriction and wherein the partial vacuum chamber is connected to the vacuum pump to switch between atmospheric pressure therein when the pump is not in operation whereby the biasing means maintains the valve cone against the restrictor to close same and a partial vacuum therein when the pump is in operation, the partial vacuum being sufficient to overcome the biasing means to maintain the valve cone fully away from the restriction to open same.

4,542,767

MONITOR FOR DOUBLE SAFETY VALVES

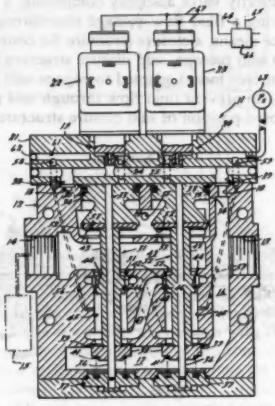
Douglas M. Thornton, Rochester, and Logan H. Mathis, Southfield, both of Mich., assignors to Ross Operating Valve Company, Troy, Mich.

Filed Apr. 5, 1983, Ser. No. 482,135

Int. Cl.⁴ F15B *13/08*

U.S. Cl. 137—596.16 **3 Claims**

1. An arrangement for sensing a malfunction in a pneumatic control system for presses or the like comprising a pressure inlet, a supply outlet, and an exhaust, a pair of valve means each having three valving parts operated thereby, the first of each valving part being effective to control the communication of pressure from said inlet to a respective intermediate pressure area of each of said valve means, the second of each of said valving parts being effective to control the communication of the intermediate pressure area of the other of said valve means with said supply outlet, and the third of each of said valving parts being effective to control the communication of said supply outlet with said exhaust, said valve means each being movable between a first position wherein said first and second valve parts are closed and said third valve parts are opened and a second position wherein said first and second valve parts are opened and said third valve parts are closed for communicating said inlet with said supply outlet and for closing communication of said supply outlet with said exhaust when both of said valve members are in their second positions, for closing communication of said inlet with said intermediate pressure areas, closing communication of said intermediate pressure areas with said supply outlet and opening communication of said supply with said exhaust when said valve means are both in their first position, and for precluding communication of inlet pressure to said supply outlet when both of said valve means are not in their second position, the improvement comprising means responsive to actual pressure for sensing pressure in either of said intermediate pressure areas for providing a malfunction signal when said valve means are intended to be in their first position.



4,542,768

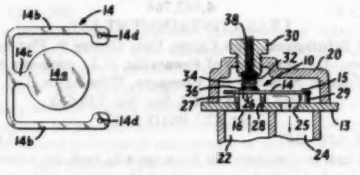
PRESSURE RELIEF VALVE

Dwight E. Harris, Woodstock, N.Y., assignor to Rotron, Inc., Woodstock, N.Y.

Filed Mar. 12, 1984, Ser. No. 588,756

Int. Cl.⁴ F16K *15/14*

U.S. Cl. 137—856 **6 Claims**



1. A pressure relief valve for use in a fluid compressor having a valve housing with inlet and outlet ports, comprising:

a cavity within said valve housing communicating with an inlet port and an outlet port of said fluid compressor;

a tubular member defining an orifice communicating with

said cavity and said outlet port, one end of said member constituting a valve seat within the cavity, said valve seat lying in a plane perpendicular to the direction of fluid flow through the orifice;

valve closure means including a planar portion normally overlaying and engaging the valve seat to close said orifice to fluid flow, said valve closure means being formed of a thin, flexible spring material responsive to fluid pressure at said orifice above a predetermined value to separate from the valve seat while remaining substantially parallel to the plane of the valve seat;

said valve closure means further comprising flexible support means joined to the planar portion of said valve closure means along an edge thereof and having arms extending from the juncture along either side of said planar portion and beyond said portion, means securing the ends of said arms remote from said juncture to said valve housing to maintain said planar portion and said arms of said valve closure means coplanar with each other and said valve seat in the closed position of said valve, said planar portion and said support means being integrally formed of a thin, flexible spring material, whereby said support means bias said planar portion normally to be overlaying and engaging the valve seat, and upon opening of the valve in response to fluid pressure, to flex and maintain the planar portion substantially parallel to the plane of the valve seat;

spring means for adjusting the predetermined value of fluid pressure at which said planar portion separates from the valve seat; and

stop means for adjusting the maximum distance said planar portion may move from the valve seat.

4,542,769

COUPLING ARRANGEMENT FOR CONTROLLING THE HARNESSES IN A WEAVING MACHINE

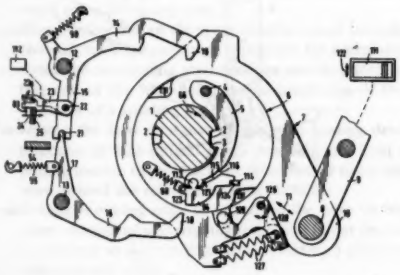
Werner Jülich, Wallisellen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 14, 1983, Ser. No. 551,702

Claims priority, application European Pat. Off., Dec. 3, 1982, 82810522.1

Int. Cl.⁴ D03C *1/00*

U.S. Cl. 139—66 R **6 Claims**



1. A coupling arrangement for controlling a harness in a weaving machine for weaving a fabric in accordance with a predetermined weaving program, comprising:

an intermittently rotatable drive shaft provided with at least one groove;

a rotatable eccentric mounted at said drive shaft;

a latch arranged at said eccentric and engageable with said groove of said drive shaft in a coupled position thereof;

a bracket enclosing said eccentric;

a connecting rod providing a driving connection to said harness in said weaving machine and cooperating with said bracket;

locking means arranged at said eccentric for locking said latch in said coupled position thereof in which said latch is coupled to said drive shaft;

programmable control means for controlling said latch and said harness in accordance with the predetermined weaving program for said fabric to be produced;

a control member operatively connected to said programmable control means and controlling said locking means which coacts with said latch;

said locking means comprising a pivotable lever revolving in conjunction with said eccentric and defining a path of movement;

said control member defining a control lever moveable into said path of movement of said locking means;

said pivotable lever forming a locking lever; and

means for pivotably mounting said locking lever at said latch.

4,542,770

COMMAND DEVICE FOR DOBBY

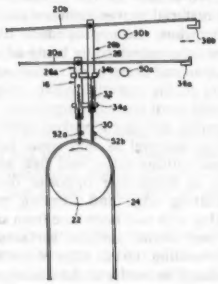
Fumio Yoshida, Aichi, Japan, assignor to Kabushiki Kaisha Yamada Dobby, Bisai, Japan

Filed Aug. 19, 1983, Ser. No. 524,755

Claims priority, application Japan, Dec. 3, 1982, 57-211235

Int. Cl.⁴ D03C *1/22*

U.S. Cl. 139—68 **4 Claims**



1. A command device for a dobby, including:

(a) an endless pattern card having perforations bored in a pattern corresponding to a desired fabric and driven in one direction;

(b) a feeler needle suspended from a horizontal needle and displaceable longitudinally while being guided by a guide member so as to permit the insertion of a lower end portion thereof into the perforations and the detection of the presence or absence of the perforations in the pattern card, whereby to give the possibility or impossibility of insertion of the feeler needle into the perforations as an operational command to a drive mechanism of the dobby via the horizontal needle so as to control the motion of a heald frame for production of the desired fabric;

(c) said lower end portion of said feeler needle below said guide member being restrained by a stopper against movement in the direction opposite to the direction of motion of said pattern card, but said lower end portion of said feeler needle below said guide member being free and unrestrained to be elastically flexed and moved with the pattern card in the direction of motion of the pattern card after entering a perforation in the pattern card, so as to avoid damage to edge portions of the perforations of the pattern card, which damage would otherwise take place due to repeated reciprocation of the feeler needle into and out of the perforations.

4,542,771

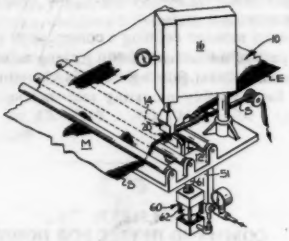
ADJUSTABLE ANVIL FOR ULTRASONIC MATERIAL CUTTING AND SEALING APPARATUS

George L. Payet, Fort Mill; James E. Hendrix, Spartanburg, and Jack R. Lowery, Sr., Lancaster, all of S.C., assignors to Springs Industries, Inc., Fort Mill, S.C.

Filed Feb. 3, 1984, Ser. No. 576,889

Int. Cl.[4] D03J *1/08*

U.S. Cl. 139—302 **14 Claims**



1. In an ultrasonic apparatus for edge cutting and sealing moving lengths of at least partially thermoplastic material, particularly textile fabric having at least some thermoplstic fibers, and including anvil means and vibrating sonic horn having a flat working face cooperating with and vibrating against said anvil means for the ultrasonic edge cutting and sealing as the material moves between said sonic horn means and said anvil means; the improvement of a construction of said anvil means characterized by being adjustable to positions for effecting clean and sharp edge cutting and desired amounts of edge sealing in the material while resisting wear on said anvil means, said anvil means comprising:

an anvil member defining a peaked cutting edge for cutting the moving material as said sonic horn means vibrates against said cutting edge, and first and second surfaces extending in respective opposite directions from said peaked cutting edge and forming respective included acute angles with said horn face from said cutting edge, of said first and second surfaces surfaces forming a sealing surface for sealing the cut edge of the material a predetermined distance inwardly of the out edge as said sonic horn vibrates against said anvil member and the other of said first and second surface forming a reinforcing surface for said cutting edge; and

means mounting said anvil member for selective pivotal movement about an axis perpendicular to said cutting edge for varying the included angles of said sealing and reinforcing surfaces so that the included angle of said sealing surface is less than the included angle of said reinforcing surface, the predetermined distance of sealing being determined by and increasing with the increasing acuteness of the predetermined included angle of said sealing surface.

4,542,772

APPARATUS FOR SELECTIVELY INTRODUCING ONE OR MORE OF A PLURALITY OF DIFFERENT WEFT THREADS INTO AN AIR JET WEAVING MACHINE

Heinz Gaschütz, 4773 Möhnesee-Gunne, Kreis Soest, Fed. Rep. of Germany

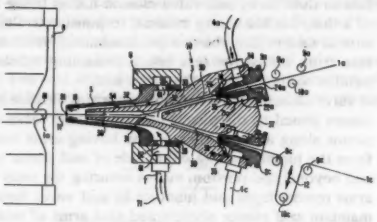
Filed Feb. 4, 1983, Ser. No. 463,994

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3203876

Int. Cl.[4] D03D *47/30*

U.S. Cl. 139—435 **7 Claims**

1. Apparatus for selectively introducing one or more of a plurality of weft threads to the weaving compartment of an air jet loom comprising a single main air nozzle including an outer portion secured to a central body, a common central air chamber within said central body, and a delivery orifice extending from said central chamber for delivery of yarn from said central chamber to said main nozzle; said central body having a plurality of auxiliary orifices leading to said central chamber; means for supplying air under pressure to the exhaust opening of said main nozzle to draw a selected yarn therethrough; a



plurality of feed nozzles each of which is mounted in operative communication with one of said plurality of auxiliary orifices; means for supplying air under pressure to a selected one of said feed nozzles to deliver a selected yarn therethrough; and a reversing means associated with each of said yarns for withdrawing the unselected yarns from said orifice.

4,542,773

PORTABLE MACHINE DESIGNED FOR THE AUTOMATIC INSTALLATION OF WIRE TIES ON CONCRETE REINFORCING STEEL FRAMES AND OPERATION THEREOF

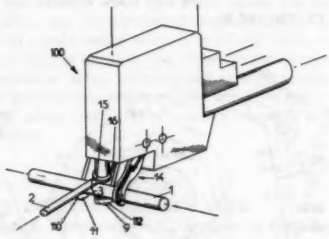
Guy Lafon, 22 Avenue De Beauregard - Cran Gevrier, Haute Savoie, France

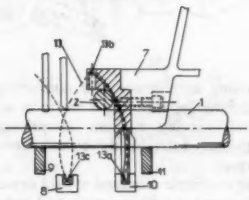
Continuation of Ser. No. 309,140, Oct. 6, 1981, abandoned. This application Jun. 12, 1984, Ser. No. 619,855

Claims priority, application France, Oct. 7, 1980, 80 21785

Int. Cl.[4] B21F *9/02*

U.S. Cl. 140—93.6 **11 Claims**





1. A portable machine for the automatic installation of a wire tie around reinforcing steel sections at the point where they cross each other comprising:

a machine housing;

a fixed stop piece attached to said housing adapted to be

placed on top of the crossing of the reinforcing steel sections;

two lower jaws, pivotally supported from said housing by a common horizontal pin, the free ends of said jaws operative to press the reinforcing steel sections against said fixed stop piece;

a multi-component wire guiding device defining a spiraling channel guide around the crossing of the reinforcing steel sections;

means disposed adjacent to the other of said two lower jaws for feeding a wire into said wire guiding device, said spiraling channel guide directing said wire into a spiral around the crossing of the reinforcing steel sections;

a hinged pair of tongs disposed adjacent to the other of said two lower jaws adapted to clamp on the free end of the spiraled wire and pull the free end of the wire tight over the crossing of the reinforcing steel sections;

means for reversing said means for feeding to pull the other end of the wire tight over the crossing of the reinforcing steel sections;

means responsive to the other end of the wire being pulled tight for cutting the wire; and

a rotating pair of rotating tongs operative to twist the ends of the wire together in response to said wire being cut.

9. A method for tying a wire tie about two crossed reinforcing steel sections comprising the steps of:

placing the fixed upper stop piece of a wire tying machine above the crossing of the reinforcing steel sections to be tied;

pivoting upward and forward two lower jaws to lock said jaws in a shut position and clamp the reinforcing steel sections against the fixed upper stop piece, said two lower jaws including a wire guide section having a spiraling channel which is automatically positioned around said reinforcing steel sections when said two lower jaws are locked in said shut position;

activating a wire feeding device in response to said two lower jaws being locked in said shut position to force a preset length of wire tie inside the spiraling channel of said wire guide section;

feeding the wire into said spiraling channel to guide the wire around the crossing of the reinforcing steel sections in the shape of an elongated coil;

pulling the free end of the wire, coming out of the spiraling channel, with hinged tongs to tighten the coiled wire tie about the reinforcing steel sections and to introduce the free end of the wire being pulled inside one of the two channels of a rotating tongs;

reversing the feed direction of the wire feeding device in response to said hinged tongs reaching the limit of its pulling motion to pull back the wire further tightening the wire around the reinforcing steel sections;

activating a cutting edge to introduce the wire tie into the other channel of said rotating tongs and to cut the wire tie in response to said feeding device exerting a preset tensile stress on said wire;

activating a clamping nut of the rotating tongs to slide axially and lock both ends of the wire tie which were previously introduced in said channels of said rotating tongs;

rotating the rotating tongs around a fixed axis so as to twist the wire tie until the ends of the wire tie locked in the rotating tongs break off under the strain at the upper portion of the twist;

reversing the direction of rotation of said rotating tongs to activate a breakaway type lug provided on said machine to interpose itself and cause the upper portion of the wire tie which may have remained in said rotating tongs to fall off; and

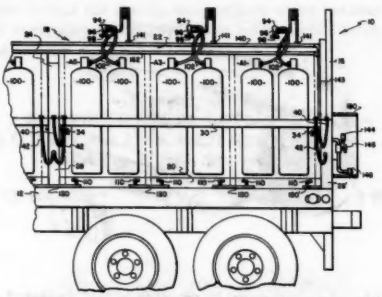
resetting all the mechanisms of said tying machine at the end of the cycle for the next wire tie.

4,542,774

DELIVERY SYSTEM AND METHOD FOR PRESSURIZED GAS

Lars G. Stavlo, Sigtuna, Sweden, assignor to AGA AB, Cleveland, Ohio

Filed Sep. 9, 1982, Ser. No. 416,238
Int. Cl.[4] B65B *3/04*
U.S. Cl. 141—1 **25 Claims**



21. A method of providing pressurized gas to a customer location, comprising the steps of:

(a) providing a flat bed vehicle with a central divider defining two side-by-side pallet sites, a plurality of pallets sized to be positioned in the pallet sites, each pallet carrying a plurality of pressurized gas cylinders and having a pallet manifold connected to its cylinders, the pallets and the vehicle having interengaging formation means for retaining the pallets in place on the vehicle adjacent the central divider, piping means on the vehicle associated with the central divider and leading to a control panel with valves and service connections, and a bridging conduit means, one for each pallet site, connected at intervals to the piping means;

(b) charging the cylinders with pressurized gas;

(c) assembling the cylinders in the pallets and loading the pallets into the pallet sites, and connecting the pallet manifolds to the vehicle piping means;

(d) operating the vehicle to transport the pallet-carried cylinders to a customer location;

(e) connecting the service connections to customer-receiving connections; and,

(f) dispensing the pressurized gas from the cylinders through the vehicle piping means and the control panel to the customer-receiving connections.

4,542,775

SLURRY CONCENTRATION AND DILUTION APPARATUS

Jeffrey L. Beck, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 264,917, May 18, 1981, Pat. No. 4,444,229. This application Nov. 14, 1983, Ser. No. 551,544
Int. Cl.[4] B65B *31/00*
U.S. Cl. 141—65 **3 Claims**

1. Concentration control apparatus in a slurry system comprising:

a. a circular side wall with first and second ends attached thereto in a manner to define a chamber;

b. a first, second and third tangential port means mounted on said side wall and opening into said chamber;

c. an axial outlet port attached to one of said end walls and opening into said chamber;

d. a source of fluid;

e. means coupling said source of fluid to said third tangential

port, said coupling means including a controllable valve means;

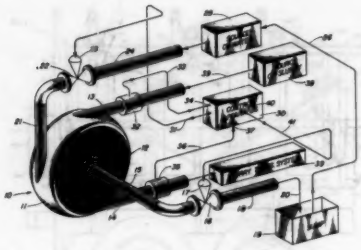
f. means coupling said first tangential port to said slurry system;

g. means coupling said second tangential port to said slurry system;

h. means coupled to said second tangential means for measuring the density of slurry through said means and generating an output signal in response to said measured density; and

i. control means accepting said output signal and generating a response signal to said controllable valve means

whereby slurry flowing into said chamber through said first tangential port and out of said chamber through said second tangential port can have its density uniformly reduced by injecting fluid into said chamber through said third tangential port.



4,542,776

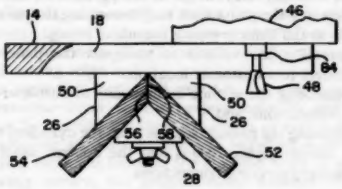
METHOD AND APPARATUS FOR MANUFACTURING SPLINED CORNER JOINTS

Lawrence C. Kehoe, Box 1920, Vineyard Haven, Mass. 02568

Filed Jun. 8, 1984, Ser. No. 618,833

Int. Cl.⁴ B27F *1/08, 5/02*

U.S. Cl. 144—353 **14 Claims**



1. An apparatus for manufacturing splined corner joints, comprising:

a worktable having a plurality of adjacent finger slots therethrough for guidably supporting a routing tool and the like on a first side thereof, the cutting blade of the routing tool projecting through the slots during use; and,

clamping means on the other side of the worktable for receiving and holding two workpieces, having mitered edges to be joined against one another, such that the mitered edges abut one another to form a desired angle about a corner axis, the corner axis being substantially perpendicular to the lengthwise axes of the finger slots, whereby guided movement of the router through the finger slots automatically provides sets of aligned slots in both mitered edges for receiving connecting splines of corresponding cross-section which lock the workpieces together in precise alignment.

5. A method for manufacturing splined corner joints on a worktable having a plurality of substantially parallel finger slots therethrough for guided movement of a routing tool and the like, comprising the steps of;

mitering abutment edges on the two workpieces to be joined as a corner;

clamping the mitered edges of the workpieces together, in operable relationship to the worktable, such that a corner axis defined by the mitered edges is perpendicular to the lengthwise axes of the finger slots;

cutting sets of aligned slots in both mitered edges by moving the cutting blade of the routing tool along the finger slots on the other surface of the worktable; and,

inserting splines into the aligned slots of the mitered edges, the splines having a cross-section corresponding to that of the slots, whereby the splines lock the workpieces together in precise alignment.

4,542,777

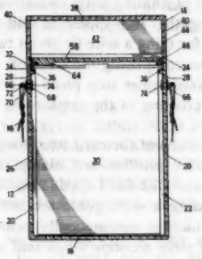
CARRYING CASE

Benjamin A. Benson, 7320 Voss Pkwy., Middleton, Wis. 53562

Filed May 24, 1984, Ser. No. 613,419

Int. Cl.⁴ A45C *11/34, 11/36;* **B42F** *15/00*

U.S. Cl. 150—52 B **16 Claims**



1. A carrying case adapted to conveniently contain writing materials comprising:

(a) a lower portion having inwardly facing surfaces that define an upwardly opening file chamber having a lower portion rim;

(b) an upper portion having inwardly facing surfaces that define a storage chamber having an upper portion rim;

(c) a panel and means for sliding the panel between a closed position and an open position to selectively close and open the storage chamber; and

(d) means for removably fastening the upper portion rim to the lower portion rim only when the panel is in its closed position to thereby close the file chamber and constrain the panel within its closed position.

4,542,778

TREAD FOR PNEUMATIC VEHICLE TIRES

Klaus Thielemann, Hildesheim, and Hagen Trabandt, Sehnde, both of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Apr. 19, 1984, Ser. No. 602,184

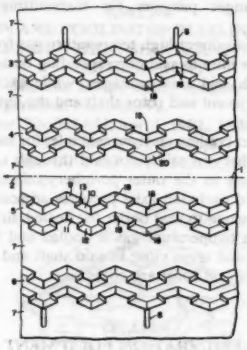
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314775

Int. Cl.⁴ B60C *11/06*

U.S. Cl. 152—209 R **5 Claims**

1. A tread configuration, for a pneumatic vehicle tire, comprising zigzagged circumferential grooves, each of which has a base and two opposite sides; each side is stepped in such a way as to form side faces, which essentially extend in the circumferential direction of said tire, and step faces, which essentially extend transverse to the circumferential direction of said tire; said side faces of a given side of one of said circumferential grooves are grouped into pairs, with said side faces of each of

said pairs merging into one another via a given one of said step faces; said step faces are disposed at an angle to a radial plane defined as extending through the main axis of said tire, such that the step faces slope upwardly toward the tread surface,



each two side faces of a given pair of side faces, which merge into one another; being staggered by the width of said one step face, with the width of the latter being that dimension thereof which extends substantially transverse to the circumferential direction of said tire.

4,542,779

TIRE CHAIN

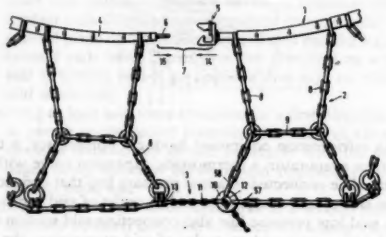
Anton Müller, Aalen-Unterkochen; Hubert König, Aalen, and Ludwig Wolfbeis, Aalen Hofherrnweiler, all of Fed. Rep. of Germany, assignors to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Aalen, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,859

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310917

Int. Cl.⁴ B60C *27/06*

U.S. Cl. 152—213 A **15 Claims**



1. A tire chain, in particular an anti-skid or antislip tire chain, including an inner part and an outer part as well as a tread part which joins the inner part and the outer part in assembled relationship therewith, of which the inner part comprises: at least one fastener having a fastener member and a counter fastener member; said fastener member having means that form an introduction opening and an attachment opening into which the counter fastener member can be engaged and said counter fastener member being frame shaped defining on opening which connects to the fastener member; the introduction opening being open in a direction towards the counter fastener member; the introduction opening being joined via at least one guide portion extending transversely of the insertion direction of the counter fastener member in a tapered relationship to the attachment opening which lies transversely of the guide portion; a resilient fitting member, having connections to fitting aids formed by grip members which are to be connected to the connections; and, in a region between the introduction opening and the attachment opening, at least one securing element being provided for said counter fastener member to prevent unintentional disengagement thereof, said fastener member and said counter fastener member forming a fastener connection opened to mount the tire chain in assembled relationship of inner, outer and tread parts over a tire subject to securing engagement of said fastener member and said counter fastener member behind the tire via said resilient fitting member in a single manipulation thereof without being visible during fastening thereof.

4,542,780

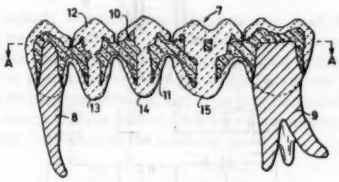
WAX PROFILES FOR DENTAL BRIDGES

Bengt Ö. Almér, Box 31025, 400 32 Göteborg, Sweden

Filed Jun. 8, 1983, Ser. No. 502,230

Int. Cl.⁴ B22C *7/00*

U.S. Cl. 164—235 **9 Claims**



1. A wax profile for use in making a dental bridge, the wax profile adapted to be a model for a negative mold into which a gold alloy is cast to result in a skeleton having the same shape as the wax profile, the skeleton thereafter being coated with porcelain to form a tooth that can be joined into a dental bridge, said wax profile comprising:

a body formed of wax and having a shape in the form of a tooth that in horizontal cross-section presents at least one substantially round lobe, said body having at least one upper tubular cavity opening to the top thereof and at least one lower tubular cavity open to the bottom thereof, there being a median tubular channel vertically connecting together the upper and lower tubular cavities, so that said porcelain coating said skeleton is continuous vertically through said skeleton to provide the tooth with high strength response to compressive forces applied vertically to said tooth in said bridge.

4,542,781

BREAKOUT WARNING METHOD, UTILIZING ACOUSTICS, IN A CONTINUOUS CASTING INSTALLATION AND APPARATUS FOR ITS IMPLEMENTATION

Manfred Kreyenhop, Bremen, Fed. Rep. of Germany, assignor to Klöckner-Werke Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Jan. 4, 1984, Ser. No. 568,069

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1983, 3300327

Int. Cl.⁴ B22D *11/16*

U.S. Cl. 164—451 **14 Claims**

1. A method for producing a breakout warning signal in a continuous casting installation wherein billets are formed within a continuous casting mold, said method using a sound recorder, storage means and comparator means, and wherein said method comprises:

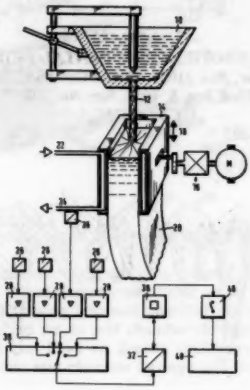
continuously measuring instantaneously actual sound signals around said mold with said sound recorder during operation of said mold;

storing and delaying said actual sound signals within said storage means to form delayed reference sound signals;

sending said delayed reference sound signals to said comparator means;

sending instantaneously said actual sound signals to said comparator means for comparison with said delayed reference sound signals; and

generating said breakout warning signal upon detecting with said comparator means a difference greater than at least one predetermined threshold value between said instantaneously sent actual sound signals and said delayed reference sound signals.



13. An apparatus for producing a breakout warning signal in a continuous casting installation wherein billets are formed within a continuous casting mold, said apparatus comprising:

a sound recorder arranged adjacent said mold for recording casting sounds;

an amplifier connected to said sound recorder for amplifying said casting sounds;

comparator means connected to said amplifier for comparing said casting sounds; and

alarm means connected to said comparator means for generating said breakout warning signal.

4,542,782

ROTARY-TYPE HEAT EXCHANGER

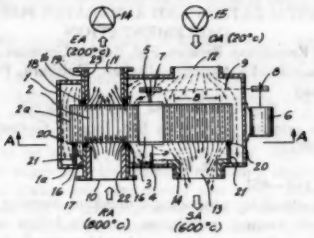
Erling Berner, Loretohohe 5, 6300 Zug, Switzerland

Filed Feb. 24, 1984, Ser. No. 583,430

Claims priority, application Japan, Feb. 28, 1983, 58-30853

Int. Cl.⁴ F28D *19/00*

U.S. Cl. 165—9 **4 Claims**



1. A rotary type heat exchanger comprising:

a casing having on one face thereof an inlet for high temperature gas and an outlet for heated air, and on an opposed face thereof a corresponding exhaust gas outlet for cooled gas and an inlet for cooling air, respectively, said inlets and outlets being diametrically disposed with respect to each other;

a rotor disposed in said casing on a shaft about a central axis parallel to said inlets and outlets and provided with axial heat exchanger passages for transmitting gas therethrough;

sealing means to direct high temperature gas from said high temperature inlet to said corresponding outlet for cooled gas through said axial passages, while excluding those passages adjacent said rotor shaft and the outer periphery of said rotor;

means to direct cooling air from said inlet for same about the outer periphery of said rotor and through said excluded axial passages in the outer periphery of said rotor and through said excluded axial passages adjacent said rotor shaft and thence to said outlet for heated air;

whereby high temperature gas is cooled and the inside of said casing and areas close to said shaft and to the outer periphery of said rotor are cooled.

4,542,783

REFRIGERATION EQUIPMENT

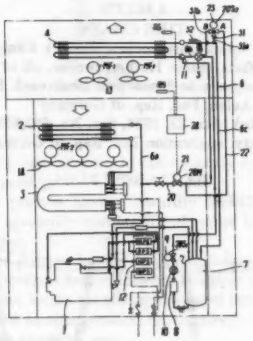
Yuji Fujimoto, Osaka; Masayuki Aono, Sakai; Tetuo Nakano, Takaishi, and Teiji Nakabayashi, Kishiwada, all of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed Sep. 7, 1983, Ser. No. 530,128

Claims priority, application Japan, Dec. 28, 1982, 57-234267

Int. Cl.⁴ F25B *29/00*

U.S. Cl. 165—30 **10 Claims**



1. In refrigeration equipment having a compressor, a condenser, an evaporator, a thermostatic expansion valve with an equalizer line connected to a low pressure line that connects a suction side of said compressor and an outlet of said expansion valve, said low pressure line also connecting said suction side of said compressor and an outlet of said evaporator, the improvement comprising control means for controlling an opening of said thermostatic expansion valve using pressure from hot gas from said compressor which by passes said condensor and said thermostatic expansion valve, said control means including:

(a) a hot gas by-pass for introducing hot gas discharged from said compressor into said evaporator by by-passing said condensor and said expansion valve;

(b) a hot gas valve on said hot gas by-pass, for controlling an amount of hot gas to be introduced into said evaporator;

(c) a control passage connected on one end to an outlet of said hot gas valve, for introducing a portion of said hot gas discharged from said compressor into said equalizer line to control an opening of said thermostatic expansion valve by means of hot gas pressure, said control passage being connected on another end to said equalizer line; and

(d) a communication shut-off valve for shutting off commu-

nication between said hot gas by-pass and said equalizer line by means of said control passage, said communication shut-off valve being responsive to closing of said hot gas valve.

4,542,784

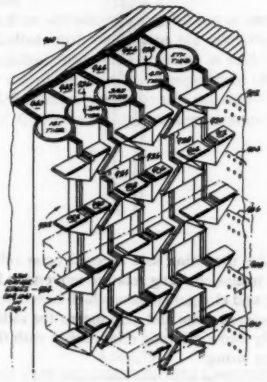
RETENTION AND COOLING OF PLUG-IN ELECTRONIC MODULES IN A HIGH SHOCK AND VIBRATION ENVIRONMENT

James W. Welsh, San Diego, Calif., assignor to Planning Research Corporation, McLean, Va.

Division of Ser. No. 364,452, Apr. 1, 1982,. This application Apr. 13, 1984, Ser. No. 600,077

Int. Cl.⁴ F28F *7/00*; H05K *7/20*

U.S. Cl. 165—80 B **10 Claims**



1. Method for selectively clamping the edges of an array of plural electronic modules into mechanical and thermal contact with a fluid coolant circuit, said method comprising the steps of:

providing a stack of plural substantially parallel generally planar fluid conduit-containing structures having spaced-apart legs, each said structure having mechanical/thermal contact pads disposed approximately perpendicular to its general plane on the inside edges of said parallel legs, said contact pads being directed in one direction on some of said structures and in an opposite direction on others of said structures;

moving at least said some structures in a first direction so as to permit unobstructed insertion of a stack of electronic modules transversely of said structures with the module edges being disposed between said opposingly directed contact pads; and

moving at least said some structures in a second direction opposite said first direction to selectively clamp the edges of said stack of electronic modules between said opposingly directed contact pads.

4,542,785

AGRICULTURAL HARVESTER HEAT EXCHANGER

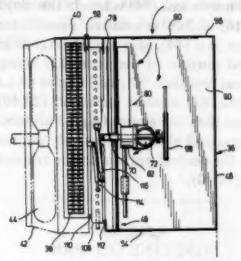
Ralph S. Bagnall, Mississauga, and William N. Helm, Oakville, both of Canada, assignors to Massey-Ferguson Industries Limited, Ontario, Canada

Filed Sep. 23, 1983, Ser. No. 534,907

Int. Cl.⁴ F28G *3/16*

U.S. Cl. 165—95 **7 Claims**

1. An agricultural harvester cooling system for cooling an internal combustion engine including a support frame, a heat exchanger mounted on the support frame, a cooling fan for moving air through the heat exchanger, a drive for the cooling fan, and a heat exchanger air cleaner assembly characterized by a fixed screen mounted on the support frame adjacent one side of the heat exchanger, a rotatable shaft passing through the fixed screen, at least one bearing assembly supporting the rotatable shaft, an air cutoff plate secured to the rotatable shaft between the fixed screen and the heat exchanger, a suction device including a central chamber secured to the rotatable shaft, a suction pipe attached to the central chamber and extending radially outward from the rotatable shaft directly opposite the air cutoff plate with the fixed screen between the suction pipe and the air cutoff plate, a long slot in the side of the suction pipe adjacent the fixed screen, a vacuum source mounted on the support frame, a vacuum pipe connected to the vacuum source and the central chamber of the suction device and a drive connected to the rotatable shaft.



4,542,786

HEAT EXCHANGER CORE WITH VARIED-ANGLE TUBES

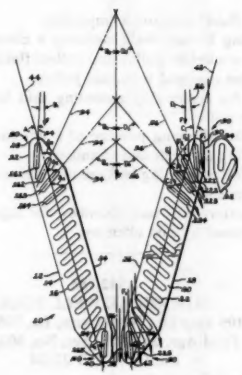
Gene A. Anders, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/01604, § 371 Date Nov. 30, 1981, § 102(e) Date Nov. 30, 1981, PCT Pub. No. WO83/01997, PCT Pub. Date Jun. 9, 1983

PCT Filed Nov. 30, 1981, Ser. No. 588,862

Int. Cl.⁴ F28F *1/32*

U.S. Cl. 165—144 **3 Claims**



1. A heat exchanger core (**12**) having an inlet end (**28**), a central portion, an outlet end (**40**), and a longitudinal axis (**44**) extending from the inlet end (**28**) to the outlet end (**40**), said core adapted to be oriented throughout a preselected range of fold angles (**48**) less than 90° between the core axis (**44**) and a general flow direction (F) of a fluid stream that the core inlet end (**28**) is adapted to receive, comprising:

a plurality of stacked and generally spaced fins (14) having a generally straight elongated configuration, and

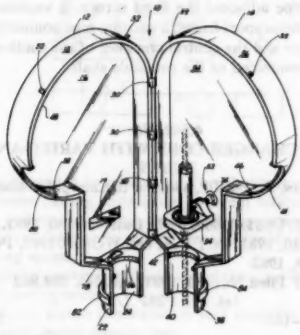
a plurality of tubes (16) extending generally perpendicular through the fins (14) of the core (12) and arranged in a single substantially-straight row between the inlet and outlet ends (28,40), each of said tubes (16) having an elongated cross-sectional configuration defining a respective longitudinal major axis (54) wherein the major axes (54) of the tubes (16) define respective preselected angles (A) with the core axis (44), said angles (A_4) of all tubes (164) in the central portion of the core (12) being of the same magnitude and less than 90°, said angles (A_3,A_2,A_1) of the tubes (163,162,161) nearest each end (28,40) of the core (12) being less than the angles (A_4) of all tubes (164) in the central portion and also progressively decreasing in magnitude from the central portion to the respective inlet and outlet ends (28,40).

4,542,787

WIRELINE OIL PAN

Richard W. Parker, Rte. 1, Box 24F, Gibson, La. 70356

Filed May 29, 1984, Ser. No. 614,690
Int. Cl.[4] E21B *33/03*
U.S. Cl. 166—84 11 Claims



1. A well fluid collector, comprising:

a. a housing having walls defining a chamber adapted to enclose a wireline pulley and collect fluids dispersed from a wireline engaged with said pulley;

b. means for removably mounting said housing around a wireline pulley;

c. means for allowing passage of a wireline engaged upon said pulley through said chamber;

d. means for preventing leakage of collected fluid from said chamber; and

e. means external of said chamber, for adjusting a packing nut enclosed by said chamber.

4,542,788

DOWNHOLE WELL TOOL

Jim Semar, 109 East Dr., New Iberin, La. 70560

Filed Apr. 23, 1984, Ser. No. 602,820
Int. Cl.[4] E21B *23/04*
U.S. Cl. 166—217 5 Claims

1. A safety tool for running in a tubing string which comprises:

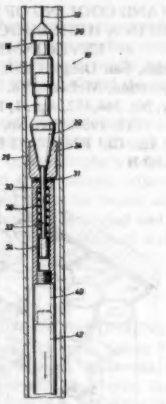
(a) a rope socket at the upper end which socket is adapted to be lowered in a tubing string on a wireline;

(b) a tapered cone below said rope socket;

(c) externally serrated tubing grip means slidable on said tapered cone and having an external surface for gripping the interior of a tubing string when moved radially outwardly adjacent to said tapered cone;

(d) an elongate connector means extending from said grip means downwardly of the tool;

(e) weight means attached to said elongate connector means for supporting a remedial wireline operated tool therebelow to be run into the tubing string; and



(f) a stem for mounting said tapered cone relative to said elongate means enabling relative movement between said stem and said elongate means which movement is coupled to said tapered cone and grip means for radial expansion outwardly into a gripping relationship with the interior of the tubing string.

4,542,789

VISCOSITY ENHANCEMENT SYSTEM

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 23, 1983, Ser. No. 478,188
Int. Cl.[4] E21B *43/16*
U.S. Cl. 166—274 16 Claims

11. In a process for the recovery of oil from a subterranean reservoir comprising injecting a surfactant slug into said reservoir via one or more injection wells followed by the injection of a mobility buffer, the improvement which comprises utilizing as said mobility buffer a viscosity enhanced fluid consisting essentially of:

(a) 100 parts by weight water;

(b) 0.5–10 parts by weight of a sodium salt of a C_{12} to C_{24} unsaturated carboxylic acid;

(c) 0.5–10 parts by weight of urea; and

(d) 0.1–15 parts by weight of NaCl.

4,542,790

PROCESS FOR EXTRACTING EXTENSIVELY EMULSION-FREE OIL FROM A SUBTERRANEAN RESERVOIR

Dieter Balzer, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huels A.G., Marl, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 300,547, Sep. 9, 1981, abandoned. This application Jul. 25, 1984, Ser. No. 633,680
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3033927
The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—274 10 Claims

1. A process for extracting extensively emulsion-free oil from a subterranean deposit, the formation water of which has a medium or high total salinity and has a relatively low alkaline

earth metal ion concentration, comprising injecting into an injection well therein an aqueous tenside solution or dispersion in formation water comprising 1–20% by weight of a mixture of 10–90% of carboxymethylated ethoxylates of the formula

$$R—(OCH_2CH_2)_n—OCH_2—COOM$$

and 90–10% of ethoxylates of the formula

$$R—(OCH_2CH_2)_n—OH,$$

wherein

R is a linear or branched hydrocarbon aliphatic group of 4–20 carbon atoms or an alkylphenyl or dialkylphenyl group of 1–14 carbon atoms in the alkyl groups,

n is 1–30, and

M is an alkali or alkaline earth metal ion or ammonium,

wherein alkaline earth metal ions are contained in the injected tenside-solution or dispersion in such a concentration that the phase inversion temperature of the system: crude oil/formation water/tenside solution or dispersion, lies 0°–10° C. above the deposit temperature.

4,542,791

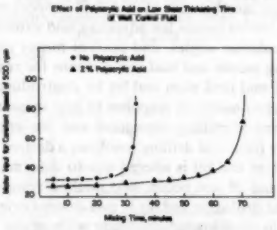
METHOD FOR PLUGGING WELLBORES WITH POLYCARBOXYLIC ACID SHEAR THICKENING COMPOSITION

Evelyn N. Drake, Plainfield, and Peter Calcavecchio, Lodi, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 586,864, Mar. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 516,905, Jul. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 413,455, Aug. 31, 1982, abandoned. This application Nov. 16, 1984, Ser. No. 672,580

Int. Cl.⁴ E21B *33/138*

U.S. Cl. 166—291 **60 Claims**


Effect of Polyacrylic Acid on Low Shear Thickening Time of Well Control Fluid
No Polyacrylic Acid
2% Polyacrylic Acid
Mixing Time, minutes

1. A process for plugging a porous earth formation which comprises contacting said formation with a shear-thickening composition which comprises a water-in-oil emulsion having particles of hydratable, water-expandable clay dispersed in the continuous oily phase thereof said oily phase having a polyamine derivative surfactant dissolved therein and said dispersed aqueous phase of said emulsion comprising an aqueous solution of a polycarboxylic acid and a polyacrylamide, said contacting occurring under conditions of high shear sufficient to form a paste from said composition which plugs said porous formation.

4,542,792

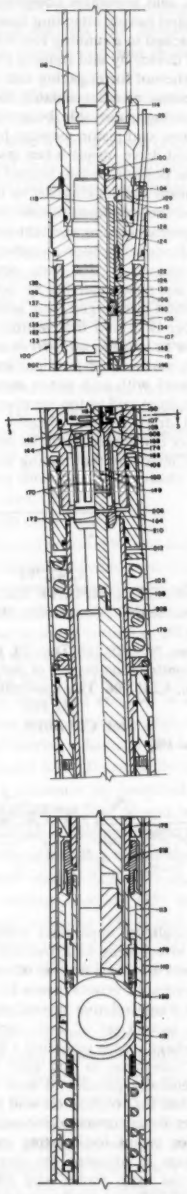
METHOD AND REMOVABLE AUXILIARY APPARATUS FOR PERMANENTLY LOCKING OPEN A WELL FLOW CONTROL DEVICE

Neil H. Akkerman, Kingwood, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Continuation of Ser. No. 259,784, May 1, 1981, abandoned. This application Feb. 21, 1984, Ser. No. 582,172

Int. Cl.⁴ E21B *23/04, 34/06*

U.S. Cl. 166—374 **18 Claims**



1. A removable auxiliary apparatus for use with a flow

control device within a conduit in a subterranean well for permanently locking said flow control device in an open position, said flow control device being of the type having a valve head member which is reciprocatingly movable between an open and a closed position and is normally biased to the closed position, drive means connected to said valve head member for causing said valve head member to open and close, and locking sleeve means operatively connected to said drive means for locking said valve head member open when opened by said drive means, said apparatus comprising: a longitudinally extending mandrel having attaching means at the top end thereof for being attached to a running tool for positioning within said flow control device by said running tool; plunger means at the bottom end thereof for engaging and opening said valve head member; a piston member slidably mounted on said mandrel and reciprocatingly movable between a first position and a second position, said piston member having contact means for contacting said drive means when said piston member moves from said first position to said second position and for causing said drive means and locking sleeve means to move into said open position; wedge means releasably attached to said piston member for permanent engagement with said drive means and detachment from said piston member when said valve head member is locked in the open position, retaining means mounted on said piston member for holding said wedge means in a first position disengaged from said drive means when said piston member is in said first position and for allowing said wedge means to engage said drive means when said piston member is in said second position; and release means operatively associated with said piston member for detaching said wedge means from said piston member after said wedge means engages said drive means, whereby said mandrel and said piston member can subsequently be removed from within said flow control device by the running tool.

4,542,793

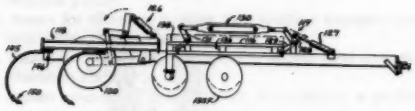
ONE-PASS COMPLETE TILLAGE SYSTEM

William J. Dietrich, Sr., Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Division of Ser. No. 220,419, Dec. 29, 1980, Pat. No. 4,403,662, which is a continuation-in-part of Ser. No. 934,585, Aug. 17, 1978, Pat. No. 4,245,706. This application Sep. 9, 1983, Ser. No. 531,169

Int. Cl.⁴ A01B *35/18*

U.S. Cl. 172—180 **10 Claims**



1. An agricultrual implement comprising: A main frame adapted for attachment to a traction vehicle and including ground support wheels; a first set of tools carried by said main frame; first hydraulic power means for adjusting the elevation of said main frame relative to said ground support wheel; a sub-frame; a second set of tools carried by said sub-frame; adjustable linkage means including a four-bar linkage for connecting said sub-frame to said main frame to maintain said sub-frame generally parallel to said main frame; rock shaft means mounted for rotation on said main frame; second hydraulic power means operated independently of said first hydraulic power means for rotating said rock shaft and said four-bar linkage in adjusting the elevation of said sub-frame relative to said main frame; said adjustable linkage means including rigid link means interconnecting said sub-frame and said rock shaft whereby an upward force on said sub-frame will be transmitted to said rock shaft and tend to rotate the same.

4,542,794

METHOD AND A MEANS FOR ALIGNING A ROCK DRILL

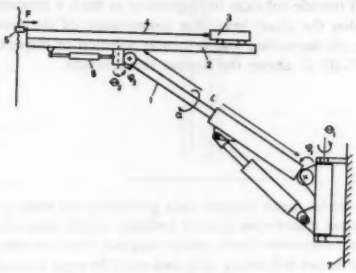
Hakon E. Bjor, Hvalstad, Norway, assignor to Ingenior Thor Furuholmen A/S, Oslo, Norway

Filed Apr. 26, 1982, Ser. No. 372,236

Claims priority, application Norway, Apr. 29, 1982, 811460

Int. Cl.⁴ E21B *15/04*

U.S. Cl. 173—1 **5 Claims**



1. A method for maintaining, during a drilling operation, a desired orientation and position of the drill stem and bit of a rock drilling rig of the type including an extensible drill boom mounted at a first end thereof on a supporting member for angular articulation relative thereto, a drill support mounted on a second end of said boom for angular articulation relative thereto and for longitudinal extension with respect thereto, a drilling machine mounted on said drill support for longitudinal movement with respect thereto, said drill stem and bit being attached to said drilling machine and movable therewith, measuring means for determining the extended length of said boom, the extended length of said drill support relative to said boom and the articulation angles of said boom with respect to said supporting member and of said drill support with respect to said boom, servo means for adjusting said extended lengths and said articulation angles, and control means connected to said measuring means and said servo means for regulating the orientation of said drill stem and bit by controlling the operation of said servo means in response to said measuring means, whereby during a drilling operation and the application of feeding power from said drilling machine, a desired orientation of said drill stem and bit is altered due to deformation of said drill support and of said boom, said method comprising:

locating said drill stem and bit at said desired orientation and position in an unloaded condition without the application of feeding power;

measuring by said measuring means values of said extended lengths and said articulation angles at said unloaded condition;

determining by said control means corrected values of respective said articulation angles required to compensate for deformation of said drill support and said boom upon the application of a given feeding power from said drilling machine; and

upon the application of said given feeding power, operating said servo means by said control means to adjust said articulation angles to said corrected values.

4,542,795

LEADER ANGLE CONTROL DEVICE

Yukio Yoshimura, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,856
Int. Cl.⁴ B23B *39/06*
U.S. Cl. 173—2 **12 Claims**

1. A leader angle control device for foundation civil engineering works machines having a leader supported by two backstays each provided with a backstay cylinder together with a bracket comprising:

inclination detecting means for detecting the leader inclination angle and for producing output signals;

arithmetic means for receiving said output signals from said inclination detection means and for calculating the difference between the working lengths of said cylinder when the leader is vertical and the current working length of said cylinders;

control means responsive to said arithmetic means for controlling the quantity of the driving oil flow of the backstay cylinder so as to make the difference zero;

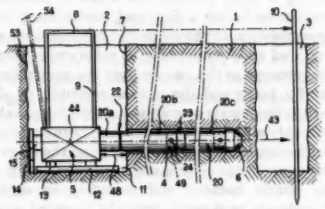
a start control circuit for forming a deviation signal which increases up to the value corresponding to said differences by making a signal representing said difference pass through a delay element and for delivering said deviation signal to said control means for a predetermined time.

4,542,796

PROCESS AND DEVICE FOR DRILLING THE SOIL

Jean Delbarre, Beuvry, France, assignor to Electricite de France, Paris, France

Filed May 23, 1983, Ser. No. 496,850
Claims priority, application France, May 27, 1982, 82 09701
Int. Cl.⁴ E21B *11/02*
U.S. Cl. 175—19 **7 Claims**



1. A device for drilling the soil including a carrying frame (29), a tool (6), displacement means for translation of said tool (6) in relation to said frame (29) in a given drilling direction (43) and means (13, 15) to support said frame (29) on the soil (1) at least toward the rear with reference to said drilling direction (43), characterized

in that said displacement means for translation of said tool (6) in relation to said frame (29) in said frame (29) in said drilling direction (43) include:

(a) means forming a slide (27, 28) that is integral with said frame (29) and oriented parallel with said drilling direction (43),

(b) a guide block (26) carried by said slide-forming means (27, 28), and guided for translation therealong parallel with said drilling direction (43) in relation to said frame (29), said guide block (26) defining a housing (46) at least partly closed toward the rear and laterally and open toward the front in reference to said drilling direction (43),

(c) pressure means (37,38) acting between said frame (29) and said guide block (46) in the direction of translation of the latter along said slide-forming means (27,28) in relation to said frame, at least in said drilling direction (43),

(d) tube-forming means (20) having a rectilinear axis (44), the tube-forming means (20) being fitted in said housing (46) and in abutment in the interior of said housing, in relation to said guide block (26), toward the rear and laterally in reference to said drillng direction (43), into a position in which said axis (44) of said tube-forming means (20) is parallel with said drilling direction (43), but is free for translation within said housing (46) in opposite direction in relation to said drilling direction, and the dimension (L) of said tube (20) parallel with the axis thereof being larger than the dimension (1) of said housing (46) parallel with said drilling direction (43) so that said tube-forming means (20) has an end zone (19) projecting forwardly in reference to said drilling direction (43), outside said housing (46) of said guide block (26),

and in that said tool (6) comprises

(e) a boring bit (6) integrally carried by said end zone (19) of said tube (20) and externally having, successively from the front to the rear in reference to said drilling direction (43), a flat cutting edge across said axis (44) of said tube-forming means (20, a frustoconical cutting edge (16) revolving about said axis (44) and converging to the front in reference to said drilling direction (43), a cylindrical cutting edge (17) revolving about said axis (44) of said tube (20) and joining said frustoconical cutting edge, said cylindrical cutting edge (17) having a diameter (D) larger than the dimensions (d) that said tube (2) externally has in relation to its axis (44) and a dimension (λ) measured parallel with said axis that is smaller than that of said corresponding dimension (L) of said tube-forming means (20),

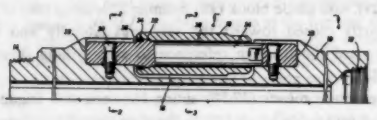
(f) a stem integral with said boring bit (6) immediately behind said cylindrical cutting edge (17) of the latter in reference to said drilling direction (43), said stem (18) being inserted in said end zone (19) of said tube-forming means (29), detachable locking means (21) ensuring the integration of said stem (18) with said tube-forming means (20),

(g) said guide block (26) has in reference to said drilling direction (43) a front end zone where it integrally carries a collar (32) that laterally closes said housing (46) in reference to said drilling direction (43) by surrounding said drilling direction in order to avoid any displacement of the tube (40) along a direction transverse to the drilling direction (43), said collar (32) conforming in shape with said tube (40) and immobilizing it transversely in relation to said drilling direction (43) in an intermediate zone (47) of said tube (40).

4,542,797
ROLLER REAMER

William R. Garrett, Conroe, Tex., assignor to Hughes Tool Company, Houston, Tex.

Continuation-in-part of Ser. No. 174,515, Aug. 1, 1980, abandoned. This application Mar. 23, 1981, Ser. No. 246,210
Int. Cl.[4] E21B *10/30, 10/22*
U.S. Cl. 175—228 50 Claims



1. Roller-reamer bore hole drilling apparatus, comprising

an elongate body having a fluid circulation hole therethrough surrounded by imperforate sidewalls and threaded at each end for connection within a drill string to adjoining members cooperatively threaded therewith,

a plurality of outwardly opening elongate slotted pockets about said body, each of said pockets having a reduced contiguous slot in at least one end,

a separate roller-reamer shaft accommodated by each of said pockets and having an end releasably rigidly inwardly secured to said body within said slot by a forced interference fit which elastically deforms the side walls of said slot and said shaft,

a separate cylindrical roller rotatably secured about each of said shafts, the external surface of which radially projects beyond the limits of said body for contacting the internal wall of the bore hole, the respective pockets accommodating each of said rollers being sufficiently large to permit fluid circulating in the bore hole to surround said accommodated roller,

radial bearing means located internal to each of said respective rollers, and

thrust bearing means to limit axial movement of each of said rollers whereby said roller and shaft are removable and replaceable externally of said body.

26. Roller-reamer bore hole drilling apparatus, comprising

an elongate body having a fluid circulation hole therethrough surrounded by imperforate sidewalls and threaded at each end for connection within a drill string to adjoining members cooperatively threaded therewith,

a plurality of outwardly opening elongate slotted pockets about said body, each of said pockets having a reduced contiguous slot in at least one end,

a separate roller-reamer shaft accommodated by each of said pockets and having an end releasably rigidly inwardly secured to said body within said slot by a forced interference fit which elastically deforms the side walls of said slot and said shaft,

each said accommodated reduced slot for the end of said shaft is slightly enlarged at the tip of said shaft end to permit elastic deformation of said body for more uniform pressure between shaft and body,

a separate cylindrical roller rotatably secured about each of said shafts, the external surface of which radially projects beyond the limits of said body for contacting the internal wall of the bore hole, the respective pockets accommodating each of said rollers being sufficiently large to permit fluid circulating in the bore hole to surround said accommodated roller,

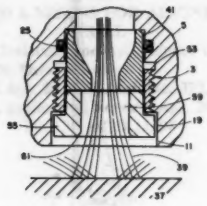
radial bearing means located internal to each of said respective rollers, and

thrust bearing means to limit axial movement of each of said rollers whereby said roller and shaft are removable and replaceable externally of said body.

4,542,798
NOZZLE ASSEMBLY FOR AN EARTH BORING DRILL BIT

James A. Madigan, Spring, Tex., assignor to Reed Rock Bit Company, Houston, Tex.

Filed Jan. 31, 1984, Ser. No. 575,644
Int. Cl.[4] E21B *10/18*
U.S. Cl. 175—340 10 Claims



1. A nozzle assembly for an earth boring drill bit of the type comprising a bit body having a threaded pin at its upper end adapted to be detachably secured to a drill string, and passaging therein for receiving drilling fluid under pressure from the drill string extending from an opening in the pin down to a nozzle bore in the lower end of the bit positioned closely adjacent to the well bore bottom when the bit is in engagement therewith for exit of the drilling fluid from the bit, the nozzle bore comprising inner and outer portions of generally circular section in coaxial alignment with each other, the outer portion extending up into the bit body from the underside thereof and being defined in part by a threaded side wall, the inner portion of the nozzle bore being defined in part by an inner end wall and carrying a seal member; said nozzle assembly comprising:

a generally cylindrical nozzle member of an abrasion and erosion resistant material selected from a plurality of such members each being of the same outer diameter but having passaging therein of different sectional areas, the passaging extending generally along the central longitudinal axis of the respective nozzle member and tapering from a relatively large opening in one end thereof, constituting its inner end with respect to the nozzle bore, to a relatively small opening in its other end, constituting its outer end, the nozzle member being adapted to be fitted in the inner portion of the nozzle bore in sealing relationship with the seal member, thereby forming a first seal for the nozzle assembly; and

a locknut separate from the nozzle member, for detachably securing the nozzle member in the nozzle bore formed at least in part of an abrasion and erosion resistant metal and having a body portion and a sleeve portion, said body portion including a first end, constituting its inner end, engageably with the outer end of the nozzle member, and a second end, constituting its outer end, generally closing the opening to the nozzle bore for preventing erosion of the bit body and the nozzle assembly by drilling fluid exiting the nozzle assembly and splashing back toward the assembly after impinging the well bore bottom; said sleeve portion extending inwardly beyond the inner end of said body portion to form a recess to receive the outer end of the nozzle member and including an outer side wall threadingly engageable with the threaded side wall of the nozzle bore for forming a second seal for the nozzle assembly, and an aperture therethrough in alignment with the passage in the nozzle member of larger sectional area than the opening in the outer face of the nozzle member for enabling a stream of high-velocity drilling fluid from the nozzle member to flow therethrough while acting to diffuse the stream, with the aperture for at least a substantial portion of its length being so configured in section as to receive a wrench for turning the locknut in one direc-

tion to thread it into the nozzle bore and in the other direction to remove it.

4,542,799

DISPLAY DEVICE FOR USE IN AN ELECTRONIC BALANCE

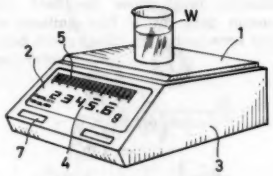
Akira Komoto, Shiga, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

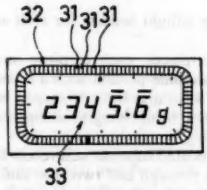
Filed Mar. 28, 1983, Ser. No. 479,333

Claims priority, application Japan, Apr. 28, 1982, 57-72274; Apr. 28, 1982, 57-62546[U]; May 26, 1982, 57-78215[U]

Int. Cl.⁴ G01G *23/30;* G01D *13/22*

U.S. Cl. 177—177 **6 Claims**





1. A display device for use in association with an electronic balance, the display device comprising:

a digital display section for digital-displaying a measured value of a load applied to a scale pan of the balance;

an analog display section for analog-displaying a value corresponding to a number of digits selected from the digits displayed on said digital display section, said analog display section including a plurality of display elements arranged in series;

a selection switch for selecting said number of digits; and

means for indicating the digits selected by said selection switch.

4,542,800

SPRING BODY WITH INTEGRATED PARALLEL GUIDE FOR A BALANCE WITH AN UPPER SCALE

Erich Knothe, Bovenden; Matthias Eger; Eberhard Stadler, both of Göttingen, and Herbert Engelhardt, Moringen-Behrensen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,208

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1982, 3244756

Int. Cl.⁴ G01G *3/08, 3/14*

U.S. Cl. 177—211 **6 Claims**

1. A spring body for a balance with an upper scale comprising:

a single cubical piece having six rectangular outside faces;

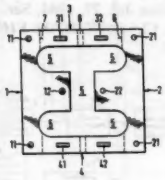
a first opening formed through the cubical piece from a first horizontal outside face to an opposite second horizontal outside face;

a second opening formed through a third vertical outside face to the first opening, so as to form first and second parallel bars having at least one spot of thin vertical cross section on each of the parallel bars;

a third opening formed through fourth outside vertical face which is opposite the third vertical outside face, which extends to the first opening, the third opening being coaxial and of identical shape and size as the second opening, and forms third and fourth parallel bars having at least one spot of thin vertical cross section on each of the bars; and

three scale receiving bores located on the first horizontal surface for mounting a scale to the cubical piece; and

the first opening is H-shaped.



4,542,801

VEHICLE TRANSFER GEAR MECHANISM

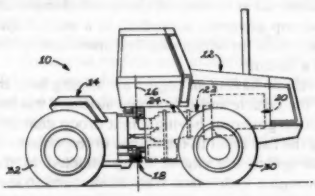
David L. Richards, Bartonville, and Willis E. Windish, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/01623, § 371 Date Dec. 4, 1981, § 102(e) Date Dec. 4, 1981, PCT Pub. No. WO83/01928, PCT Pub. Date Jun. 9, 1983

PCT Filed Dec. 4, 1981, Ser. No. 624,500

Int. Cl.⁴ B60K *17/28, 17/34*

U.S. Cl. 180—53.1 **22 Claims**



9. In a transfer gear mechanism for a vehicle of the type including a housing and a depending gear transfer train supported within the housing for propelling the vehicle, the gear transfer train having an input gear disposed on an upper axis and an output gear disposed on a lower axis, the improvement comprising:

a PTO input gear supported within the housing on the upper axis;

a pump connected to the housing on the upper axis;

drive means for rotatably powering the PTO input gear and the pump; and

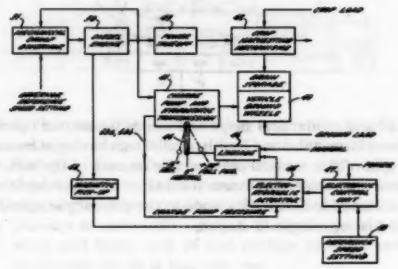
a PTO clutch assembly supported within the housing on a third axis elevationally intermediate the upper and lower axes and disposed substantially underneath the pump, the PTO clutch assembly being driven by the PTO input gear.

4,542,802

ENGINE AND TRANSMISSION CONTROL SYSTEM FOR COMBINES AND THE LIKE

Daniel C. Garvey, Fort Collins, and Richard D. Fiolkoski, Ault, both of Colo., assignors to Woodward Governor Company, Rockford, Ill.

Continuation of Ser. No. 364,635, Apr. 2, 1982, abandoned. This application Jul. 27, 1984, Ser. No. 635,470
Int. Cl.[4] B60K *23/00*; F16H *39/46*
U.S. Cl. 180—306 16 Claims



1. A method of controlling a crop-processing vehicle having an engine for driving both the ground wheels of the vehicle and a crop-processing mechanism, and a speed droop governor for regulating the fuel input to the engine in response to changes in the engine speed, said speed droop governor having a first speed droop characteristic, the engine being coupled to the ground wheels through a hydrostatic transmission, and the power takeoff for the crop-processing mechanism being located on the engine side of the hydrostatic transmission, said method comprising the steps of

regulating the fuel input to the engine in response to changes in engine load, the speed of the engine being gradually reduced as fuel input is increased, and

regulating the setting of said hydrostatic transmission in response to changes in at least one parameter that varies with engine load,

generating a signal representing a droop factor for controlling the setting of said transmission to vary the ground speed of the engine in accordance with variations in said parameter so as to control the speed changes effected by said droop governor according to a second speed droop characteristic in which said first speed droop characteristic is a factor.

4. In a vehicle having an engine for driving both the ground wheels of the vehicle and at least one auxiliary mechanism, and a speed droop governor having a first droop characteristic for regulating the fuel input to the engine in response to changes in the engine speed, the engine being coupled to the ground wheels through a hydrostatic transmission and to the auxiliary mechanism through a power takeoff on the engine side of the transmission, a control system comprising

an actuator connected to said hydrstatic transmission for adjusting said transmission to regulate the gear ratio between the engine and the ground wheels, thereby adjusting the load on said engine and the power transmitted to said ground wheels, in response to an electrical control signal,

means for generating electrical signals representing the actual speed of the engine, a reference speed for the engine, and a speed error signal corresponding to the difference between said actual and said reference speeds,

means for generating said electrical control signal for said actuator as a function of said speed error signal, and

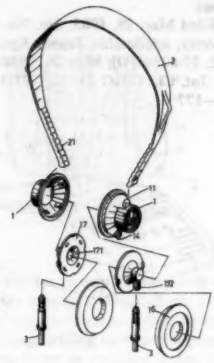
means for adding to said speed error signal a second droop characteristic in which said first droop characteristic is a factor.

4,542,803

DETACHABLE INFLIGHT HEADSET FOR CIVIL AIRCRAFT

Huang C. Houng, No. 138, Chung-Hsing St., Kaohsiung City, Taiwan

Filed May 31, 1984, Ser. No. 615,722
Int. Cl.[4] H04M *1/05*
U.S. Cl. 181—129 1 Claim



1. A detachable inflight headset for civil aircraft, comprising:

(a) a pair of earpieces, each earpiece including a casing provided at one side portion with a recess partly defined by two slits separated by a V-shaped member, said V-shaped member being integral at opposed ends thereof with said casing;

(b) an opening located adjacent said recess and communicating therewith through said two slits, said opening having a side wall opposite to said V-shaped member, said side wall having two successive stepped portions, one of which is inclined to narrow said opening;

(c) a circular hole is formed with the interior of said casing;

(d) a pair of covering plates, each plate being embedded on each casing, each covering plate having a central recess and a tubular portion communicating with said central recess, said tubular portion having a smoothly curved surface;

(e) a pair of ear cushions, each cushion mounted on each covering plate;

(f) a headband having two ends, each end of which is inserted into the opening of each casing, said headband being provided at an inner side of each end with a plurality of protuberances terminating in a vertical edge and a cant at the outermost end; and

(g) a pair of acoustic pipes, each pipe connected to the circular hole of each said casing and provided with a head having thereon a number of circumferential projections for engaging said circular hole.

4,542,804

BOSUN CHAIR SUPPORT APPARATUS

Donald L. Power, 4460 E. 68th Ave., Commerce City, Colo. 80022

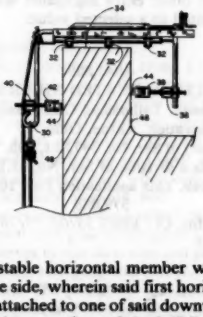
Filed Mar. 2, 1984, Ser. No. 585,896
Int. Cl.[4] A62B *1/16*
U.S. Cl. 182—38 2 Claims

1. A manually portable, movable, bosun chair support apparatus comprising:

(a) an open rectangular frame member with a plurality of roller means mounted to the underside of at least two opposite edges of said open rectangular frame, wherein said frame member is adapted to straddle and rest on the

top ledge of a building wall such that said roller means allows said open rectangular frame to move along the top ledge of the building wall;

(b) an adjustable worm gear and crank means operatively attached to said open rectangular frame member such as to rest perpendicular to the top of the building wall when said open rectangular frame member straddles and rests on the top ledge of the building wall and wherein said adjustable worm gear and crank means further consist of a first and second vertical arm attached to opposite ends of said worm gear and crank means and extending downwardly from said open rectangular frame member below the top ledge of the building wall on which said frame member moves such that one of said arms is on the inside and the other on the outside of the building wall thus forming a generally U-shaped worm gear adjustable member wherein rotating said worm gear means operatively moves said downwardly extending arms toward or away from each other;



(c) a first adjustable horizontal member with a plurality of rollers on one side, wherein said first horizontal member is operatively attached to one of said downwardly extending arms on the inner surface of the building wall such that said plurality of rollers are directed towards said building wall and said horizontal members with rollers are adjustable up and down said inner arm and adjustable towards and away from said inner arm;

(d) a second adjustable horizontal member with a plurality of rollers on one side, wherein said second horizontal member is operatively attached to the other of said downwardly extending arms on the outer surface of the building wall such that said plurality of rollers are directed towards said building wall and are adjustable towards and away from said outer arm; and

(e) a hook means operatively attached to the lower end of said outer arm for attaching a rope or the like thereto.

4,542,805

AUTOMATICALLY RETRACTABLE, ROTATABLE STEP ASSEMBLY

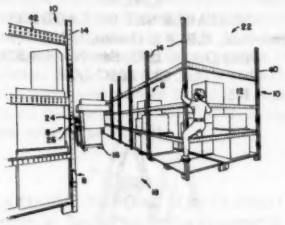
David A. Hamlin, 2922 - 314th SW., Federal Way, Wash. 98023, and Melvin L. Glover, 24427 - 11th Ave. S., Kent, Wash. 98032

Filed Aug. 3, 1984, Ser. No. 637,560
Int. Cl.⁴ E06C *9/04, 7/08;* B60R *3/02*
U.S. Cl. 182—91 **17 Claims**

1. An automatically retractable, rotatable step used with storage racking, to provide access to the upper levels of said racking, and which is adaptively secured to a stanchion of said racking to support a foot of a person after being activated to a position substantially normal to said stanchion and which is then automatically retracted and returned to and stored, after being inactivated and the foot removed, in a substantially upright position, immediately adjacent to and clearing the front edge of the stanchion to thereby clear aisle way space adjacent to the storage rack, and which comprises:

(a) a pivotal support member secured to the stanchion; and

(b) a cross member brace, perpendicularly secured to the pivotal support member and adaptively positioned along said support member rearward of the stanchion and which is further adapted to supportively abut the back side of the stanchion thereby restricting further downward pivotal rotation of said support member, when the step is fully activated; and



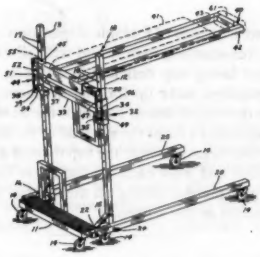
(c) a means to automatically retract the step after being inactivated which is secured to the pivotal support member.

4,542,806

FOLDING MECHANIC'S WORK DOLLY

Keith D. Olson, Rte. 1, Box 47, Twin Valley, Minn. 56584

Filed Sep. 8, 1981, Ser. No. 300,195
Int. Cl.⁴ B25H *5/00*
U.S. Cl. 182—152 **10 Claims**



1. A portable foldable mechanic's work dolly comprising, in combination;

a horizontally disposed base member stably supportable upon a horizontal surface and including a pair of spaced, parallel legs extending vertically upwardly therefrom;

slideable base means disposed on and extending between said parallel legs;

worker's support means rotatably disposed on said sliding base means, operable between a vertical storage position and a horizontal position;

locking means operable to restrain said slideable base means when said worker's support means is in said horizontal position; and

foldable support means rotatably disposed on said base member and operable between a vertical storage position and a horizontal position in stabilizing contact with the horizontal surface underneath said worker support means when the latter is in its horizontal position, the foldable support means and the worker's support means when in their respective vertical positions being carried by the horizontally disposed base in a compact orientation with the weight of the vertical elements distributed for balance over the base member, whereby the dolly may be stably supported about a horizontal surface for storage;

the parallel legs on the base member including a plurality of vertically spaced complimentary disposed locking apertures and the working support means including a pair of

locking pins disposed to engage an aperture on each of the legs when said worker's support means is in said horizontal position.

4,542,807

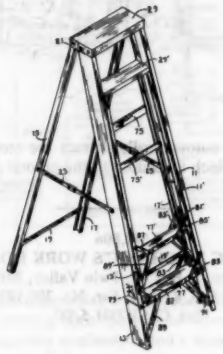
NESTABLE SET OF LADDERS

John L. Simerman, R.R. #1, Ossian, Ind. 46777

Filed Oct. 6, 1983, Ser. No. 539,528

Int. Cl.[4] E06C *1/24*

U.S. Cl. 182—178 **2 Claims**



1. A nested sequence of foldable stepladders of varying sizes each of the free-standing variety and with all except the smallest stepladder being step deficient in a region where steps of smaller stepladders make up for that deficiency by providing steps within the step deficient region of the next larger stepladder, each stepladder except the smallest of the sequence including exactly two steps, one near the top thereof and one near the bottom thereof and with each stepladder in the sequence except the largest thereof resting on the bottom step of the next larger stepladder in the sequence.

4,542,808

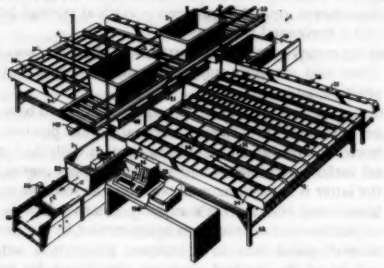
ORDER FILLING SYSTEM

Harry J. Lloyd, Jr., Stanley; Hoyt W. Huggins, Leawood, both of Kans.; Michael R. Lyon, Kansas City, Mo.; David N. Thayer, Shawnee, Kans., and William E. McGovney, Kansas City, Mo., assignors to House of Lloyd, Inc., Grandview, Mo.

Filed Jun. 30, 1983, Ser. No. 509,295

Int. Cl.[4] E04H *3/04*

U.S. Cl. 186—56 **22 Claims**



1. A method of grouping items to fill orders comprising the steps of:

(a) positioning a plurality of item dispensers along a conveyor;

(b) loading each dispenser with a single type of item, said dispensers collectively being loaded with a variety of types of items;

(c) conveying an item receptacle bin past said dispensers, said bin being associated with an order for various quanties of said items;

(d) detecting the presence of said bin at each of selected dispensers which are loaded with items defined by the order associated with said bin by the steps of:

(1) ascertaining the position of each dispenser along said conveyor in terms of an offset distance equal to a number of increments of conveyor travel of a selected length from a first reference point on said conveyor;

(2) constructing an order table in a computer memory for each bin, said order table including an offset entry corresponding to the offset distance of each dispenser of items required by said order; and

(3) decrementing each offset entry of said table in response to each increment of travel of said bin; and

(e) dispensing a required quantity of items from a dispenser in response to the offset entry associated with said dispenser being decremented to a selected value.

4,542,809

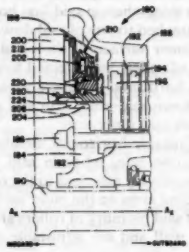
ELECTRICALLY ACTUATED AIRCRAFT BRAKES

Richard L. Crossman, Tallmadge, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 347,851, Feb. 11, 1982, Pat. No. 4,432,440, which is a division of Ser. No. 62,199, Jul. 30, 1979, Pat. No. 4,381,049. This application Feb. 10, 1984, Ser. No. 579,065

Int. Cl.[4] F16D *55/02, 55/16*

U.S. Cl. 188—72.8 **20 Claims**



1. An improved recirculating-ball screw drive comprising in combination:

a relatively stationary annular-shaped member having a bore and a ball bearing race groove formed within the bore;

an annular-shaped ram member mounted within the bore of the stationary member and adapted for axial linear motion through the bore, said ram member having a plurality of helical ball race grooves of a particular pitch within an outwardly facing annular surface thereof; and

a relatively rotatable annular-shaped member mounted coaxially between the relatively stationary and ram members and having a ball bearing race groove in an outwardly facing annular surface in relative alignment with the ball race groove in the stationary member, said two races and a plurality of ball bearings carried between them forming a thrust bearing to maintain the relative positions of the two members, said rotatable member further comprising a plurality of gear teeth about a peripheral edge surface adapted for driving the member into rotation and at least one helical ball groove turn formed within its bore of the same pitch as the ball race grooves formed in the outer facing surface of the ram member, said ball grooves and a plurality of ball bearings carried therebetween forming a ball-screw drive of the ram member upon rotation of the rotatable member, said balls being recirculated back

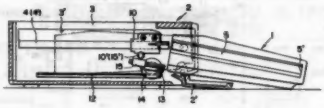
through a ball transfer passageway formed within the bore of the rotatable member to effect continued ball-screw drive motion of the linearly moving ram member.

4,542,810

DAMPER DEVICE

Sakuzo Shimbara, Hiroshima, Japan, assignor to Nifco Ind., Yokohama, Japan

Filed Oct. 19, 1983, Ser. No. 543,560
Claims priority, application Japan, Oct. 19, 1982, 57-182055
Int. Cl.⁴ F16F *15/20*
U.S. Cl. 188—290 **7 Claims**



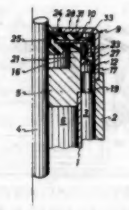
1. A damper device, comprising:
a slider capable of reciprocating along a rail,
a rack gear disposed below said rail paralllelly thereto,
a damper suspended swingably from said slider said damper including a case having internal damping means connected to a shaft projecting through said case and a toothed wheel mounted on said shaft and adapted to be meshed with said rack gear when said damper is swung into a predetermined position, and
means for causing said toothed wheel to be positively engaged with said rack gear in wedge-like relationship when said slider moves in one direction and pushes said damper from behind and swinging said damper into said predetermined position and releasing said toothed wheel from positive engagement with said rack gear by swinging said damper away from said rack when said slider moves in the opposite direction and drags said damper behind in impositive engagement.

4,542,811

SHOCK ABSORBER

Takeshi Miura, Watari, Aza-baba-Machi 55-1, Fukushima-ken, Fukushima-shi, Japan

Filed Oct. 26, 1982, Ser. No. 436,711
Claims priority, application Japan, Sep. 21, 1982, 57-142915[U]
Int. Cl.⁴ F16F *9/36*
U.S. Cl. 188—322.17 **3 Claims**



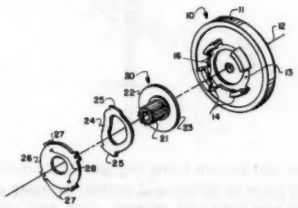
1. A shock absorber comprising an oil cylinder **1** and a gas tube **2**, which are jointed together in a concentrically-arranged state to form a gas chamber **3** therebetween; a rod **4** moved reciprocatingly in said oil cylinder **1**; and a bearing **5** having an axially extending cylindrical support portion **21**, fixed to an end portion of said oil cylinder **1**, forming an oil chamber **6** in cooperation with said oil cylinder **1** and said rod **4**, said axially extending cylindrical support portion **21** having a communication groove **31** and supporting said rod **4** in such a manner that said rod **4** can be slidingly moved; and an oil seal **10** reinforced by an annular reinforcing member **33**, which has a main lip **25** sealingly slidable with respect to a circumferential surface of said rod **4**, and a check valve lip **12** having substantially frustoconcial shape, resiliently contracting an outer circumferential surface of said cylindrical support portion **21**, and adapted to allow an oil to flow from said oil chamber **6** to said gas chamber **3**, and prevent a gas from flowing in the opposite direction, and whose reinforced portion is firmly held between said bearing **5** and inwardly-extending flange portion **28** provided at the end portion of said gas tube **2** as a radially-extending portion **24**, with which said main lip **25** and said check valve lip **12** are connected integrally with each other, is supported on said cylindrical support portion **21**.

4,542,812

VARIABLE TORQUE SLIP CLUTCH

Curtis E. Westley, St. Louis Park, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 5, 1984, Ser. No. 586,151
Int. Cl.⁴ F16D *7/02, 23/00*
U.S. Cl. 192—56 R **18 Claims**



1. A variable torque slip clutch comprising:
a first member having a first surface of revolution thereon transverse to an axis and facing in a first direction along the axis, said first member being configured with ramp surface means facing in a second direction opposite the first direction, the ramp surface means having a plurality of first engaging means thereon angularly spaced about the axis;
a second member having a second surface of revolution configured and positioned for sliding contact with the first surface of revolution;
a spring compressible along the axis; and
a retainer configured and positioned to cooperate with the ramp surface means so as to variably squeeze said spring and said second member between said retainer and said first member, thereby varying the torque at which said second member slips relative to said first member, said retainer having second engaging means configured to cooperate with the first engaging means to permit rotational repositioning of said retainer about the axis relative to said first member only after displacing said retainer in the second direction.

4,542,813

FRICTIONAL CLUTCH ASSEMBLY

Bernhard Schierling, Kürnach, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 18, 1983, Ser. No. 485,655
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215886
Int. Cl.⁴ F16D *13/50*
U.S. Cl. 192—70.27 **9 Claims**

1. In a frictional clutch assembly comprising a driving member (**5**) rotatable about an axis (**19**) and having a driving member engagement face,
a clutch housing (**4**) fixed to said driving member (**5**) for common rotation therewith,

a pressure plate (2) located axially between said driving member engagement face and said clutch housing (4), said pressure plate (2) being fixed for common rotation with said clutch housing (4), being axially movable with respect to said driving member (5) and having a pressure plate engagement face opposite to said driving member engagement face,

a clutch disc unit (10) having a first counter engagement face for axially engaging said driving member engagement face and a second counter engagement face for axially engaging said pressure plate engagement face, for axially engaging said pressure plate engagement face,

an annular diaphragm spring (1) about said axis having a radially outer edge, a radially inner edge, an annular support area about said axis supported by said clutch housing (4), an annular pressure plate engagement area about said axis acting upon said pressure plate (2) for urging said pressure plate (2) towards said driving member engagement face and an annular release unit engagement area

about said axis for being engaged by a clutch release unit (9) in view of lifting said annular pressure plate engagement area from said pressure plate, said release unit engagement area being adjacent the radially inner edge of said annular diaphragm spring (1), said annular diaphragm spring (1) being provided with radially extending slots extending radially outward from said radially inner edge, said radially extending slots defining radially inwardly extending tongues (11, 12) therebetween,

the improvement comprising

a first group of tongues (11) being deflected relative to a second group of tongues (12) at least adjacent their respective radially inner ends, an annular spacer assembly (13) being positioned axially between said first group of tongues (11) and said second group of tongues (12), said annular spacer assembly (13) comprises a first spacer ring member (13) located adjacent said release unit engagement area, a second spacer ring member (15) is located radially outwardly of said first spacer ring member (13).

4,542,814

SYSTEM FOR PRECISE VALVE CONTROL

Howard L. Ledeen, Flintridge, and Chander P. Mittal, Rowland Heights, both of Calif., assignors to Ledeen Flow Control Systems, Inc., Sun Valley, Calif.

Filed Sep. 30, 1983, Ser. No. 537,517

Int. Cl.[4] B60K *41/22*; F16D *23/12, 47/00*

U.S. Cl. 192—0.098 **8 Claims**

1. A system for precise position control of a fluid control valve which is operated by rotary movement of an actuating shaft, said control system comprising:

rotary motion transmitting means, including an input shaft, for turning said actuating shaft;

opposing first and second rotary transmission members having output ends thereof connected to opposite ends of said input shaft and input ends to be rotatably driven;

first and second reciprocable driving means at the input ends of said rotary transmission members;

interengagable means on each of said driving means and the input end of a rotary transmission member for imparting an increment of rotation to said rotary transmission member in response to a stroke of said driving means in one direction only;

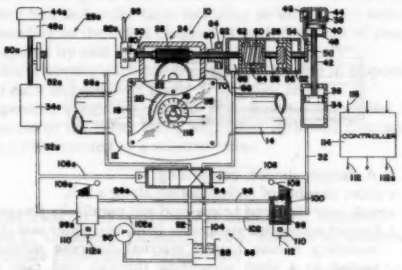
a pressure-actuated member in each of said driving means operative when pressurized to move said driving means in said one direction;

biasing means opposing said pressure-actuated member;

a source of pressure fluid;

a pair of actuating means, each operative when activated to deliver a pulse of pressure fluid to one of said driving means;

clutch means in each of said rotary transmission members



operative when engaged to transmit rotary motion from said input end thereof;

energizing means for engaging said clutch means;

continuous energy supply means connected to said energizing means for activation thereof;

a two-position switch device in said supply means operative in each of two positions to activate one only of said clutch energizing means; and

means associated with each of said actuating means for moving said switch device to activate the clutch actuating means associated with said actuating means upon activation of said actuating means.

4,542,815

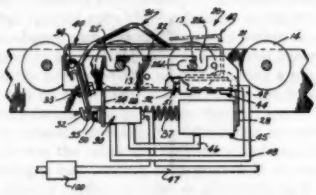
AIR BRAKE AND RETARDER FOR GRAVITY CONVEYORS

Hendrik Leemkuil, Grand Rapids, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Nov. 3, 1983, Ser. No. 548,303

Int. Cl.[4] B65G *13/00*

U.S. Cl. 193—35 A **11 Claims**



4. A pneumatic retarder for gravity conveyor having a plurality of rotatable article support elements, said retarder comprising: an article engaging brake element; a pneumatically actuated member for moving the brake element into article engagement and brake force applying position when the member is activated; means for sensing the presence of an article over the brake element; a source of air; means for accumulating a predetermined volume of air under pressure from said source of air; a valve connected to and activated by said sensing means when the latter is contacted by an article for connecting said accumulating means to said actuator for admitting a charge of

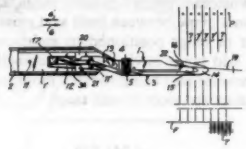
air of a predetermined volume to the actuator and simultaneously isolating said accumulator means from said source of air; said actuator having a constantly open bleed valve for discharging the charge of air from the actuator at a predetermined rate to deactivate the actuator and return the brake element to inactive position.

4,542,816

EXIT CLIP FOR INSERTION OF THE WEFT IN THE SHED OF A SHUTTLELESS WEAVING LOOM

Pascal Scherrer, and Yves Juillard, both of Mulhouse, France, assignors to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse Cedex, France

Filed Jul. 20, 1982, Ser. No. 400,125
Claims priority, application France, Jul. 28, 1981, 81 14602
Int. Cl.⁴ D03D *47/18*
U.S. Cl. 139—448 **5 Claims**



1. An exit clip for insertion of the weft in a shuttleless weaving loom, comprising:

an extended body fixedly connected to a needle for movement therewith;

a movable extended portion pivotably connected at a pivot axis to said body, a hook being at one end of said movable portion, one end of said body being received within said hook at one pivoted position of said hook, a thread of yarn being subject to clamping between facing surfaces of said hook and said one end of said body at said one pivoted position of said hook, said facing surfaces being inclined with respect to a plane of displacement of said movable portion about said pivoting axis, the angle of slope of the clamping facing surfaces being substantially equal to or greater than the limiting angular value which permits maintenance of the clamping grip on the thread formed within the hook, said grip being subject to release by application of external force to said movable portion, and further comprising means for applying said external force.

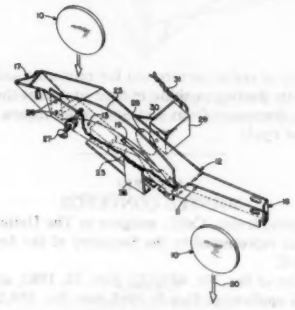
4,542,817

DEVICE FOR PREVENTING IMPROPER OPERATION OF A SLOT MACHINE

Robert C. Paulson, 1111 N. Lamb Blvd., Las Vegas, Nev. 89110

Filed Nov. 21, 1983, Ser. No. 553,515
Int. Cl.⁴ G07F *3/02*
U.S. Cl. 194—99 **7 Claims**

1. In a slot machine having a coin slot which is intended to receive a coin or a facimile thereof of certain parameters and having a coin track of a bottom wall and spaced apart side walls arranged in said machine to receive said coin in the entrance end thereof when dropped from said coin slot and to direct said coin along said bottom wall in an upright rolling attitude between said side walls to drop from the exit end thereof and against a switch which then operates to condition said machine for a subsequent gaming operation, an improved coin track assembly for said machine mountable in substitution of said described coin track, said assembly comprising a first means for detecting an imitation of said coin which differs substantially in the parameter of thickness and for preventing said conditioning of said machine for a subsequent gaming operation in response to detecting said imitation, and a second means for detecting an imitation of said coin which differs substantially in the parameter of surface light reflectivity and for preventing said conditioning of said machine for a subsequent gaming operation in response to detecting said imitation, said first and second means comprising an elongated leaf spring member secured at one end thereof to one of the side walls of



said assembly adjacent the entrance end thereof and extending longitudinally of said assembly between the side walls thereof toward the exit end thereof, said first means further comprising a slot formed in the bottom wall of said assembly intermediate the ends thereof and extending longitudinally of and contiguous to the other side wall of said assembly, said slot having a width less than the thickness parameter of a coin intended for said machine, and said leaf spring being curved longitudinally thereof with the convex side thereof facing said other side wall to guide a coin received in the entrance end of said assembly over said slot, whereby an imitation of said coin with a thickness parameter less than the thickness parameter of a coin intended for said machine is guided by said leaf spring to at least partially enter said slot.

4,542,818

DISPLACEMENT BENCH FOR MAIL SORTING EQUIPMENT AND LETTER GUIDANCE INSERTION FLAP EQUIPPING SUCH A BENCH

Claude Pavie, Houilles, France, assignor to Hotchkiss-Brandt Sogeme H.B.S., Paris, France

Filed Aug. 10, 1983, Ser. No. 521,829
Claims priority, application France, Aug. 13, 1982, 82 14102
Int. Cl.⁴ B65G *47/04, 47/22, 47/34, 47/53, 47/84*
U.S. Cl. 198—469.1 **10 Claims**

1. Apparatus for feeding documents of varying size, said apparatus comprising:

(a) a conveying means for feeding individual documents at spaced intervals in a first direction;

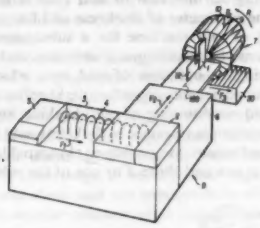
(b) a drum subdivided into a plurality of radial sectors;

(c) a drive means for rotating said drum about an axis extending in said first direction;

(d) a movable insertion flap positioned between said conveying means and said drum in position to accept one of the documents at a time from said conveying means and to insert each successive document into a successive one of said plurality of radial sectors as said drive means rotates said drum; and

(e) an insertion flap drive means operatively connected to said insertion flap for moving said insertion flap in syn-

chronism with each successive one of said plurality of radial sectors long enough for one of the documents to be transferred from said insertion flap to said one of said



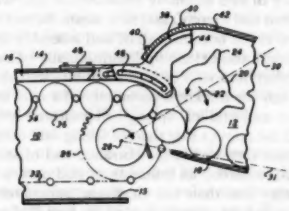
plurality of radial sectors and for returning said insertion flap to its starting position in time to accept the next successive document from said conveying means and to repeat the cycle.

4,542,819

JOINTED CONVEYOR

Earl D. Richey, Irvine, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 444,137, Nov. 24, 1982, abandoned.
This application Oct. 9, 1984, Ser. No. 659,142
Int. Cl.[4] F41D *10/00*
U.S. Cl. 198—584 **3 Claims**



1. A conveyor mechanism for ammunition in a gun, the mechanism having an articulating joint therein where the ammunition is fed, comprising:

upstream and downstream respective chute means, said downstream chute means being operable to articulate, by means including exterior brackets, about a common joint axis with respect to said upstream chute means, wherein ammunition is conveyed from the upstream chute for feeding to the downstream chute across a gap at the junction of both the chute means, the respective chutes being separated by an amount of distance which varies by the relative degree to which the chutes articulate;

said upstream chute comprising an endless chain mounted within the upstream chute to circulate along the length thereof, the said chain comprising a plurality of parallel pusher rods transversely mounted on said chain at a spacing to allow the ammunition to fit therebetween; a powered gear element for driving said chain, positioned within said chute adjacent the end of the upstream chute at the joint area where articulation takes place, the ammunition passing over the gear element and dropping into the area of the joint, a guide wall above said chain and parallel thereto for holding down said ammunition as it is conveyed along the chain toward the joint area;

said downstream chute comprising a handoff sprocket mounted about a sprocket axis, a lower guide wall below the level of the sprocket axis and with one edge extending into said joint area to a point vertically below the transverse axis of a piece of ammunition as it comes off the chain in the joint area, said sprocket communicating with said ammunition and lower guide wall to pick off ammunition pieces as they orbit said joint axis through contact of the said guide wall edge and also by being pushed by said sprocket, down said guide wall into the downstream chute, said sprocket being powered in synchronism with said endless chain, there being a mechanism for insuring smooth ammunition transition across the joint area by preserving a constant gap thereacross of suitable precision despite articulation, said insuring mechanism comprising:

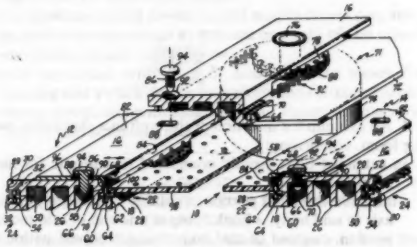
respective curved guide means mounted on the said upstream and downstream chute means, the respective guide means connected by a sliding linkage means; said linkage means comprising a link member having transverse pins projecting from said link member; a respective upstream and downstream pair of parallel tangs, said linkage positioned on a plane between both said pairs of tangs, one of said pair of tangs positioned to embrace the other pair, each of said tangs having a longitudinally disposed slot; said transverse pins being slidably mounted in said longitudinally disposed slots in said tangs.

4,542,820

CONVEYOR FOR A SUBSTRATE

Richard B. Maxner, Danvers, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Oct. 28, 1983, Ser. No. 545,671
Int. Cl.[4] B65G *15/10, 21/20*
U.S. Cl. 198—817 **2 Claims**



1. A conveyor for transporting a substrate free from contact with any stationary portions of the conveyor, comprising:

a. a pair of substantially parallel track members extending from end to end of the conveyor, each of said track members having inwardly facing side members and outwardly facing side members;

b. said inwardly facing side members each having guide means which contain a recess with support shelves separated by a downwardly extending longitudinal recess;

c. said outwardly facing side members each having a U-shaped recess;

d. a substrate support means received in said recess of said guide means and said U-shaped recess and comprising a plurality of flexibly interconnected members having projections forming cross shaped opposed horizontal and vertical legs;

e. the legs of said projections being received in said guide means so that the opposed horizontal legs rest on said support shelves with the intermediate vertical leg positioned in said longitudinal recess to interfit said support means in said guide means;

f. one pair of adjacent horizontal and vertical legs of said projections being adapted to support the side edges and lower edges only of the substrate so that the substrate is only supported by said projections; and

g. guide plates secured to said track members adjacent said

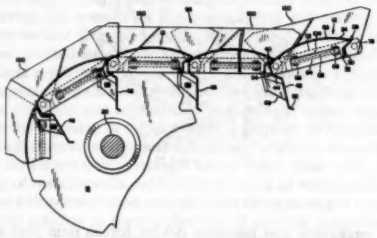
inwardly facing side members, said guide plates each having downwardly extending projections adapted to over lie the side edges of the substrate to permit limited upward movement only of the substrate.

4,542,821

HUMP BACK CONVEYOR

Richard S. Livermore, Oregon City, Oreg., assignor to Lamb-Weston, Inc., Portland, Oreg.

Filed Feb. 22, 1983, Ser. No. 468,564
Int. Cl.⁴ B65G *17/10*
U.S. Cl. 198—822 **8 Claims**



1. An endless loop conveyor comprising:
a plurality of elongate conveyor flights;
connecting means flexibly interconnecting each flight along opposite longitudinal edges to adjacent flights to form an endless loop;
sprocket means for supporting forward and rearward ends of the loop;
support means extending between the sprocket means for supporting the opposite ends of each flight;
each conveyor flight being formed of a single piece of sheet metal and having
(a) a longitudinally curved product-supporting portion,
(b) a forwardly protruding nose portion spanning the full width of the flight, the nose portion vertically overlapping a forward adjacent flight when such flights follow a substantially straight path,
(c) said nose portion being defined by a forward edge of said product-supporting portion and a further portion of the flight extending generally rearwardly at an acute angle to the product-supporting portion, and
(d) a forward portion extending from said further flight portion generally perpendicular to the direction of travel of the flight and spanning the full width of the flight, the forward portion forming an obtuse angle with said further flight portion;
whereby each flight is capable of supporting its own weight and the weight of the product supported thereon without requiring transverse supporting members.

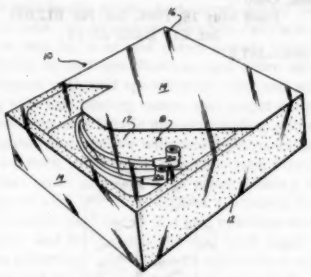
4,542,822

DISPLAY PACKAGE

Robert J. Kennedy, Jr.; Kendall S. Smith, II, and Gregory N. Brown, all of Lafayette, Ind., assignors to Ristance Corporation, Mishawaka, Ind.

Filed Jul. 21, 1980, Ser. No. 170,856
Int. Cl.⁴ B65D *65/16, 85/30, 81/16*
U.S. Cl. 206—45.33 **3 Claims**

1. A display package including an inner box, said box being defined by opposite upper and lower side faces and a peripheral edge extending about said side faces, a cavity formed in said upper side face to receive merchandise, an opening formed in part of said lower side face in communication with a portion only of said cavity, with the remainder of said box at its lower face forming a wall means for supporting said merchandise, a removable cover fitting about said box, said cover underlying said lower face at its opening therein and overlying said upper face over said wall means with said lower face opening and



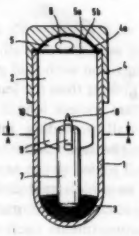
underlying cover at the opening being exposed, whereby said merchandise will overlie said cover at said lower face opening.

4,542,823

MIXING CONTAINER

Hansjörg Frick, Schaan, Liechtenstein, assignor to Etablissement Dentaire Ivoclar, Schann, Liechtenstein

Continuation of Ser. No. 513,600, Jul. 14, 1983, abandoned. This application Oct. 22, 1984, Ser. No. 663,289
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 3227432
Int. Cl.⁴ B65D *25/08*
U.S. Cl. 206—220 **13 Claims**



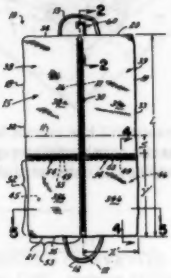
1. A mixing container for separately storing and mixing interactive materials used in manufacturing dental preparations, comprising a first part in the form of a mixing compartment (2) which contains a normally powdered material; and a second separable cup shaped part (4) separated by a separating wall from the mixing compartment and containing a liquid, the mixing compartment comprising a movable oblong pestle, said separating wall being a wall facing said mixing compartment (2), and defining a liquid-filled destructible foil bag (5) in said second part (4), the tear strength of said separating wall and the pressure impulse imparted by the pestle (7) when the container is shaken in an oscillating mixer are matched so as to result in the destruction of the said foil bag when struck by the pestle, wherein at least the end of the pestle (7) which faces the foil bag (5) has guides (9), and wherein the end (10) of the pestle (7) that faces the separating wall (5*a*) is complementary in shape and size to the inside of the front wall (4*a*) of the second part (4).

4,542,824

HANG-UP GARMENT BAG

James H. Allen, Covington, Ky., assignor to 'totes' incorporated, Loveland, Ohio

Filed May 18, 1984, Ser. No. 612,031
Int. Cl.[4] B65D *85/18*
U.S. Cl. 206—287.1 9 Claims



1. A hang-up garment bag comprising

first and second major sidewalls,

a peripheral gusset wall interconnecting said sidewalls, each major sidewall being joined to a peripheral edge of said gusset wall,

an interior divider wall joined with said gusset wall at a peripheral edge of said gusset wall, said interior divider wall, prior to connection with said gusset wall, being of a length and width greater than the length and width of said major sidewall, that excess length and width for said interior divider wall providing interior depth to that major compartment between said interior divider wall and that major sidewall joined to the same peripheral edge of said gusset wall to which said interior divider wall is joined, thereby providing said garment bag with two major interior compartments each of which in the bag hang-up position is a length and width substantially the same as the length and width of said major sidewalls in the bag hang-up position,

two pocket liner walls for providing two minor interior compartments, each of said pocket liner walls being joined partially with said gusset wall at a peripheral side edge of said gusset wall, both of said pocket liner walls having a length less than about one-half the length of said major sidewalls when said sidewalls are in the bag hang-up position, thereby providing said garment bag with two minor interior compartments each of which is of a length less than one-half the length of said major sidewalls in the bag hang-up position, and

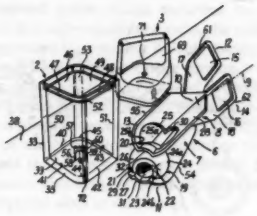
a slide fastener in each of said major sidewalls, said slide fastener providing access to said major compartments, said slide fastener separating said minor compartments along one edge thereof, and one-half of said slide fastener being connected to one edge of one minor compartment and the other half of said slide fastener being connected to one edge of said other minor compartment.

4,542,825

PACKAGING AND HANDLING DEVICE FOR AN ITEM THAT IS TO REMAIN PROTECTED FROM ANY DIRECT MANUAL CONTACT, AND SET INCLUDING SUCH A DEVICE AND SUCH AND ITEM

Jacques Thomas, St. Maime, and Claude Raval, Dauphin, both of France, assignors to Synthese Et Creation, Forcalquier, France

Filed Aug. 2, 1984, Ser. No. 636,868
Claims priority, application France, Aug. 2, 1983, 83 12717
Int. Cl.[4] B65D *85/58;* B25B *3/00*
U.S. Cl. 206—363 19 Claims



1. A packaging and handling device for an item that is to remain protected from direct manual contact comprising:

a forceps having at least two jaws, said jaws being movable relative to one another between a closed condition in which they are relatively close to one another so that they define a recess adapted to retain the item by a correlation of shapes, and an open condition in which they are relatively apart from one another to open said recess and thus liberate the item; said forceps, at a distance from said jaws, also has handling means which are functionally connected with the jaws in such a way as to provide, at will, said open or closed condition; and

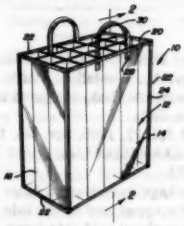
a box which includes a casing and a lid, said box being adapted to receive therein said forceps in such a position that said jaws, when closed and holding said item in said recess formed by said jaws, are contained in said casing, and said handling means are turned towards said lid; said jaws of said forceps, and said casing, have complementary shapes, whereby said casing maintains said jaws in a closed condition.

4,542,826

FLEXIBLE BAG TYPE BEVERAGE CAN CARRIER

Mark S. Adams, Indian Trail, R.F.D. 1, New Milford, Conn. 06776

Filed Dec. 30, 1983, Ser. No. 567,166
Int. Cl.[4] B65D *5/36, 33/02*
U.S. Cl. 206—427 1 Claim



1. A reusable carrier for use in combination with a plurality of beverage cans of cylindrical configuration with flat ends in which the cans are of a identical size for stacking in a plurality

of vertical stacks, said carrier comprising a generally rectangular bottom wall, a pair of generally rectangular sidewalls and a pair of generally rectangular end walls of less width than the sidewalls, said bottom wall and sidewalls being constructed from one piece of material, said end walls being secured to the end edges of the bottom wall and side edges of the sidewalls by tape reinforced seams, all of said walls and seams being of flexible transparent plastic material with the internal dimensions of the carrier spacing the walls apart a distance to receive a plurality of side-by-side stacks of beverage cans, the top edge of the sidewalls and end walls being reinforced by binding tape and being spaced from the bottom wall a distance to receive a plurality of vertically stacked cans, a loop handle in the form of a tape reinforced strip of flexible material secured centrally to the top edge of each sidewall, a substantially rigid bottom liner covering the interior of the bottom wall and resting on the upper surface thereof in unattached relation to enable the liner to be pivoted upwardly about one side edge thereof into a vertical position alongside one of said sidewalls, a plurality of transversely spaced, longitudinal dividers extending vertically from the liner and terminating in a straight upper edge flush with the top edge of the end walls, a plurality of longitudinally spaced, transverse dividers extending vertically from the liner and terminating in a straight upper edge flush with the top edge of the sidewalls, said dividers being of substantially rigid panel-like construction, said dividers being arranged in perpendicular relation to form a plurality of vertical extending compartments to closely receive stacks of can, said dividers including an inwardly extending slot extending from one end edge to a point just past the mid-length to enable sliding assembly and disassembly and relative movement to folded condition when the compartments are empty, and an end wall liner of substantially rigid construction engaging the inner surface of each end wall and generally coextensive therewith and being retained in place against the end wall by the end edges of the longitudinal dividers, said end wall liners, bottom liner and dividers being positionable alongside one sidewall when the carrier is empty whereby the flexibility of the components of the carrier enables the carrier to be collapsed into compact condition for storage and to enable the carrier to be used as a grocery bag, shopping bag and the like after the empty beverage cans have been returned to a collection point for refund of a deposit.

4,542,827

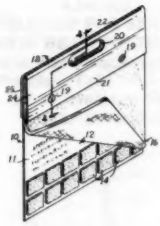
CARPET SAMPLE SYSTEM

Daniel C. Pilzer, Atlanta, Ga., assignor to D P Sales, Inc., Atlanta, Ga.

Filed Jul. 28, 1983, Ser. No. 518,125

Int. Cl.[4] B65D *75/00, 85/00*

U.S. Cl. 206—483 **5 Claims**



1. A carpet sample package including at least one specification card, at least one carpet sample, and one handle means for carrying said sample package, said specification card being formed of sheet material sufficiently stiff to stand on its edge and including printed material for indicating technical data for a carpet type, a plurality of swatches of said carpet type carried by said specification card, each swatch of said plurality of swatches having a different characteristic while being of said carpet type, said specification card defining holes therein adjacent to the upper edge of said specification card, said handle means including binding means selectively cooperating with said holes in said specification card for carrying said specification card on said handle means, said carpet sample being substantially the same size as said specification card and defining holes therein, said holes in said carpet sample being aligned with said holes in said specification card when said carpet sample is aligned with said specification card and selectively cooperating with said binding means, said carpet sample being of said carpet type, said handle means including a front panel, and a back panel co-extensive with said front panel, said front panel and said back panel being hinged to each other along a line, said front panel and said back panel defining openings therethrough of such size as to receive a person's fingers for holding said sample package so that said openings constitute a handle proper, said front panel and said back panel defining holes therein selectively alignable with said holes in said specification card and in said carpet sample, said binding means being receivable through the aligned holes, the arrangement being such that said carpet sample and said specification card can be received between said front panel and said back panel of said handle means, and a plurality of said carpet samples and specification cards can be received on opposite sides of said handle means with said front panel and said back panel held together with said binding means.

4,542,828

HYGIENE IMPLEMENT

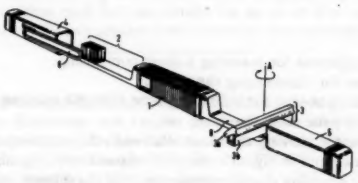
Raymond J. Gotto, 10 The Grove, Patchway, Bristol, Avon, United Kingdom

Filed Aug. 8, 1983, Ser. No. 521,042

Claims priority, application United Kingdom, Aug. 16, 1982, 8223560; Jun. 20, 1983, 8316686

Int. Cl.[4] A45D *44/18;* **B65D** *85/00*

U.S. Cl. 206—581 **7 Claims**



1. A hygiene implement comprising:

a toothbrush portion comprising a toothbrush head and toothbrush head supporting means;

a razor portion comprising a razor head and razor head supporting means;

a hollow body portion defining opposite ends;

first connecting means connecting the toothbrush head supporting means to one end of the body portion;

second connecting means connecting the razor head supporting means to the other end of the body portion, one of said connecting means comprising removable connecting means permitting access to the interior of said hollow body as an incident of removal of the supporting portion therefrom;

first housing means for removably housing the toothbrush portion;

second housing means for removably housing the razor portion, said first housing means completely surrounding the toothbrush portion and the second housing means completely surrounding the razor portion when the implement is not in use and which, when the implement is in use, can be moved away from the body portion so as selectively to expose at least one of the toothbrush portion and the razor portion for use, said body portion having a length preselected to permit it to be used as the manipulating handle for the implement when used either as a tooth-

brush or razor, said housing means extending in encircling relationship to the ends of the body portion defining a handle extension thereof; and

means on said first housing means for supporting the implement.

4,542,829

APPARATUS FOR SORTING SHEETS ACCORDING TO THEIR PATTERNS

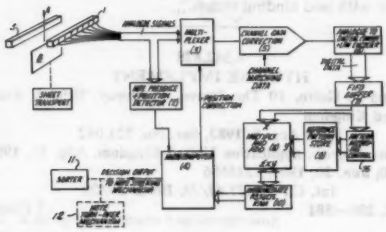
Stephen G. Emery, and Rick J. Humble, both of Hampshire, England, assignors to De La Rue Systems Limited, London, England

Filed Nov. 2, 1982, Ser. No. 438,710

Claims priority, application United Kingdom, Nov. 3, 1981, 8133154

Int. Cl.⁴ B07C *5/342*; G06K *9/00*

U.S. Cl. 209—534 **4 Claims**



1. Apparatus for scanning a sheet comprising:

means for illuminating the sheets;

scanning means for collecting light from illuminated pixels of a pattern on the sheet;

means for moving the sheet relative to the scanning means;

an analogue-to-digital converter responsive to signals from the scanning means representative of the intensity of light from each pixel, to produce intensity signals in digital form;

means for storing a plurality of sets of signals, each stored set of signals being representative of a different standard pattern;

ditital correlator means for correlating the digital signals corresponding to the pattern on the sheet, pixel by pixel, with each of the stored sets of standard-pattern signals, the correlating means generating, for each correlation of the patttern on the sheet with a standard pattern, a correlation output signal, where:

$$\frac{m\Sigma x_i y_i - \Sigma x_i \Sigma y_i}{\sqrt{[m\Sigma x_i^2 - (\Sigma x_i)^2]\,[m\Sigma y_i^2 - (\Sigma y_i)^2]}}$$

and in which:

m is the total number of pixels of the patterns; i takes all values between 1 and m,

Y_i is the i^{th} pixel of the standard, previously-stored pattern, and

x_i is the i^{th} pixel of the pattern on the sheet, and;

sorting means, responsive to the correlation output signals, for diverting the sheet to a destination corresponding to a standard pattern only if the corresponding correlation output signal is higher than the correlation output signals for all other standard patterns.

4,542,830

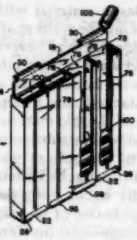
DISPOSABLE STORAGE RACK FOR CANS OR THE LIKE

Wayne A. Effort, 79 College Ave., North Tarrytown, N.Y. 10591

Filed Jan. 25, 1984, Ser. No. 573,676

Int. Cl.⁴ A47F *7/28*

U.S. Cl. 211—49.1 **7 Claims**



1. A disposable storage rack for cans or the like comprising:

a container defined by a blank constituted of cardboard or the like, said blank having panel portions foldable to provide a front wall, rear wall, side walls, and top and bottom walls of said container;

the interior of said container being subdivided by a plurality of spaced partitions extending from said top wall to said bottom wall, thereby to permit storage of cans in each compartment in contiguous relationship from the top to the bottom of said container;

said front wall panel including pairs of adhesive portions extending on either side of a common fold line to a respective fold line, such that the adhesive portions may be brought together in pairs to define each of said partitions;

a plurality of slotted openings extending from adjacent the top of the front wall to the bottom thereof, and extending into the respective compartments;

the top wall being disengageable so that the container is adapted to be hung for storage purposes.

4,542,831

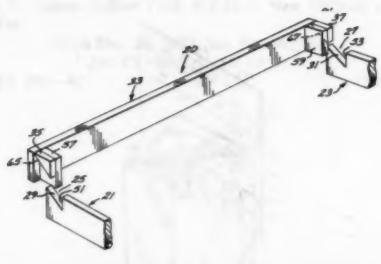
CLEATING APPARATUS

Renald A. Dazza, Huntington Beach, Calif., assignor to Bayshore Tile Company, Costa Mesa, Calif.

Filed Nov. 3, 1983, Ser. No. 548,246

Int. Cl.⁴ A47G *29/02*

U.S. Cl. 211—90 **9 Claims**



1. A cleating apparatus for mounting on coextensive opposed vertical return walls formed by a recess from a room for supporting therefrom a horizontal top and vertical front skirt, said apparatus comprising:

a pair of side rails for mounting on said return wall and including at the respective one extremities thereof adjacent said room with upwardly opening notches formed proximate said one extremities with downwardly and rearwardly inclined wedge surfaces;

a pair of brackets mounted on the opposite ends of said skirt and projecting rearwardly therefrom; and,

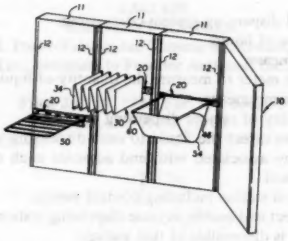
a pair of wedge blocks mounted on said respective brackets and formed with downwardly and rearwardly inclined slide surfaces shaped to complimentally fit said wedge surfaces and spaced from the back side of said skirt to cause gravity to draw said skirt against said one ends of said respective rails when the weight thereof is carried in said notches by said blocks whereby said rails may be mounted on said return walls, said blocks fitted in said respective notches to suspend said skirt therefrom for receipt thereover of said top.

4,542,832

STORAGE ACCESSORIES FOR MOVABLE PARTITION SYSTEMS

Harold N. Minick, Tryon, N.C., and Douglas F. Wolff, Marshall, Mich., assignors to Wolff Wire Corporation, Ludington, Mich.

Filed Aug. 26, 1982, Ser. No. 411,592
Int. Cl.[4] A47F *5/08*
U.S. Cl. 211—106 **4 Claims**



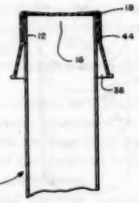
1. A rack for articles and a beam for suspending said rack and means holding said beam against rotation about its longitudinal axis, a plurality of individual brackets each having a pair of vertically aligned and spaced horizontal arms extending outwardly therefrom; said brackets being mounted on and spaced apart lengthwise of said beam; an elongated flexible web supported by and extending between the arms of all of the brackets, said web being wrapped under the lower arm and over the upper arm of each bracket to form generally vertically extending panels defining a plurality of V-shaped article receiving compartments between each adjacent bracket.

4,542,833

STRETCHABLE CAP FOR SEALING AND/OR RESEALING BLOOD DRAWING TUBES AND THE LIKE

Donald H. DeVaughn, San Francisco, Calif., assignor to Bio-Plas, Inc., San Francisco, Calif.

Filed Jun. 11, 1984, Ser. No. 619,348
Int. Cl.[4] B65D *41/22*
U.S. Cl. 215—319 **18 Claims**



1. A cap for sealing closed the opened end of an elongated tube such as a blood drawing tube having an upper lip around its opened end, a test tube or the like, comprising:

(a) an integrally formed top end section having a closed top end, a cylindrical sidewall depending down from said top end so as to define a receiving area for a top end section of said elongated tube including the tube's upper lip, and an annular rib concentrically disposed around the inner surface of said sidewall a fixed distance from said top end and extending a fixed distance into said receiving area, said main section sized relative to said tube and integrally formed from a sufficiently flexible material so as to receive readily said top end section of said tube within said receiving area such that said annular rib engages the entire outer annular circumference of the tube's top end section just under its upper lip in a fluid tight manner and such that said main section is equally readily removable from said top end section of said tube;

(b) an outwardly tapering skirt having a cylindrical cross section, integrally formed of the same material as said upper main section and having a top opened end and a larger bottom opened end, said skirt being integrally connected at its top end to the bottom end of said cylindrical sidewall and extending down from the latter in coaxial relationship therewith whereby to define a downwardly opening circumferential space around the outer surface of said tube when the top end section of said tube is disposed within the receiving area of said top end section; and

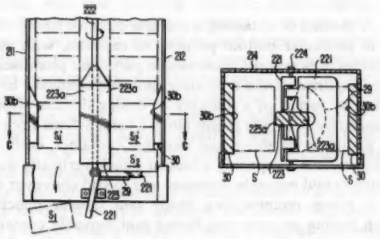
(c) said top end section including a second annular rib concentrically disposed around the inner surface of said sidewall below said first-mentioned rib and extending into said receiving area a fixed distance whereby to sealingly engage the outer circumference of said tube in the same manner as said first-mentioned rib, said second rib extending a greater distance into said receiving area than said first-mentioned rib whereby to compensate for a tube which might be out-of-round to a limited extent, said second rib being sufficiently closer in proximity to said skirt than said first-mentioned rib so as to flex radially outwardly to a greater extent than the first-mentioned rib.

4,542,834

DISPENSING MECHANISM FOR VENDING MACHINES

Akihito Kurosawa, and Osamu Anazawa, both of Maebashi, Japan, assignors to Sanden Corporation, Isesaki, Japan

Filed Dec. 8, 1983, Ser. No. 559,468
Claims priority, application Japan, Dec. 8, 1982, 57-215085; Dec. 8, 1982, 57-215086
Int. Cl.[4] B65G *59/06*; B65H *3/44*
U.S. Cl. 221—116 **6 Claims**



1. In an article dispenser for dispensing articles from a vending machine, said article dispenser including an article storage area in which the articles are held in two vertically adjacent rows in a stacked disposition above a bottom opening through which the lowermost articles are dispensed and a dispensing mechanism to dispense the lowermost articles stacked in said storage area through said bottom opening, said dispensing mechanism including a rotatable shaft vertically extending within said storage area between the two vertically adjacent

rows, a pair of flappers pivotably supported within said storage area adjacent to the lower end of said rotatable shaft to cover the bottom opening in said storage area and control plate means fixed on the lower end of said rotatable shaft in contact with the lower surface of said flappers for controlling the pivoting of each of said flappers upon rotation of said rotatable shaft to selectively open and close said flappers to dispense the lowermost stacked articles in the two vertically adjacent rows, the improvement comprising article holder means in said dispensing mechanism for holding all articles except the lowermost articles in both vertically adjacent rows of articles in a stacked disposition during the opening of said flappers by said control plate means so that only the lowermost stacked articles are dispensed through said bottom opening, said article holding means having two opposite holding surfaces adjacent the two vertically adjacent rows of articles to frictionally engage articles in both the vertically adjacent rows of articles.

4,542,835

METHOD FOR FILLING CONTAINERS WITH METERED QUANTITIES OF POWDERED MATERIALS

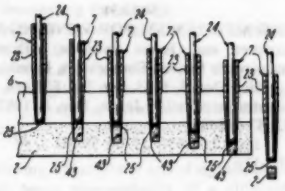
Ernesto Gamberini, Rostignano-Pianoro, Italy, assignor to MG2 S.p.A., Pian di Macina, Italy

Filed Mar. 1, 1983, Ser. No. 470,957

Claims priority, application Italy, Mar. 3, 1982, 3355 A/82

Int. Cl.⁴ B65B *1/04*

U.S. Cl. 222—1 **6 Claims**



1. A method of obtaining a uniform dose for filling containers, in particular bottom portions of capsules, with metered quantities of powdered materials, in particular pharmaceutical materials, drawn from a rotating movable container having a bottom by means of a plurality of dosing devices which are advanced by conveyor means along a path, at least a portion of said path extends above said movable container, each of said dosing devices comprising a tubular punch vertically movable relative to said movable container and to said conveyor means, and a piston reciprocating inside said tubular punch, said punch having an open end facing said movable container to define within said punch a variable volume dosing chamber; the method comprising, for each of said dosing devices, the steps of locating said punch substantially in contact with said powdered material inside said movable container, said piston being positioned inside said punch so as to define a zero volume dosing chamber; and increasing said volume of said dosing chamber from zero to a predetermined maximum by moving said punch relative to said piston toward said bottom of said movable container, thereby allowing said powdered material to fill said dosing chamber to obtain a uniform dose.

4,542,836

LIQUID DISPENSING SYSTEM

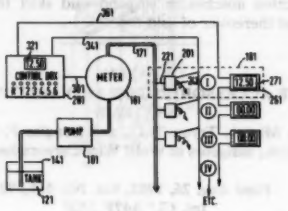
David J. Sparks, Chippenham; Keith Whitefoot, Swindon, and John S. Knubley, Penzance, all of England, assignors to Castrol Limited, Swindon, England

Filed Jun. 27, 1983, Ser. No. 508,350

Claims priority, application United Kingdom, Jul. 1, 1982, 8219075

Int. Cl.⁴ B67D *5/06*

U.S. Cl. 222—27 **30 Claims**



1. A liquid dispensing system comprising:
(a) a source of liquid;
(b) pump means;
(c) a single meter to measure the quantity of liquid pumped by the pump means;
(d) a plurality of remote dispensing stations;
(e) means to direct the liquid to each dispensing station;
(f) a display associated with and adjacent each dispensing station; and
(g) a control station including control means;
(i) to select and enable any one dispensing station whereby liquid is dispensible at that station;
(ii) and while at the same time, to disable all the other dispensing stations whereby liquid is not dispensible at any of those stations;
(iii) to monitor the single meter;
(iv) to effect a reading on the display associated with said one station, said reading corresponding to the volume of liquid passing through the single meter and being dispensed at said one dispensing station; and,
(v) while at the same time, to effect a zero or null reading on the displays associated with all said other dispensing stations.

4,542,837

AEROSOL ACTUATOR

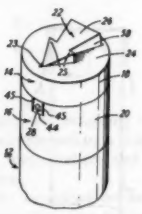
Adrien P. Rayner, Iver, England, assignor to Metal Box P.L.C., Reading, England

Filed Mar. 6, 1984, Ser. No. 586,819

Claims priority, application United Kingdom, Mar. 12, 1983, 8306856

Int. Cl.⁴ B65D *83/00*

U.S. Cl. 222—402.11 **10 Claims**



1. An actuator for an aerosol container, which comprises an

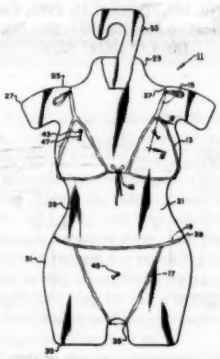
upper part having an an actuating member with a first engageable surface and a lower part having an arm member, a second engageable surface and an outlet, said upper and lower parts being rotatable between a first, operative position and a second, inoperative position, in the operative position the actuating member being movable and effective to actuate the arm member which operably engages a valve of said container to which the actuator including said arm member is fitted and thereby cause aerosol product to issue from the outlet, and in the inoperative position the actuating member being inoperative to actuate the arm member and thereby cause dispensing, wherein, upon rotation of the upper and lower parts from said inoperative position to said operative position, the actuating member is moved from a depressed position to a raised position respectively by cam action of said engageable surfaces whereby the actuating member when in said raised and said operative position becomes moveable and effective to actuate the arm member, and upon rotation of the upper and lower parts from said operative to said inoperative position, the actuating member is moved from said raised to said depressed position respectively whereby the actuating member becomes inoperative to move the arm member.

4,542,838

GARMENT HANGER

Drucilla M. Perez-Tubens, and Thomas R. Stewart, both of Fort Worth, Tex., assignors to Frontier Antiques, Inc., Fort Worth, Tex.

Filed Jul. 30, 1984, Ser. No. 636,096
Int. Cl.[4] A47J *51/08*
U.S. Cl. 223—87 **3 Claims**



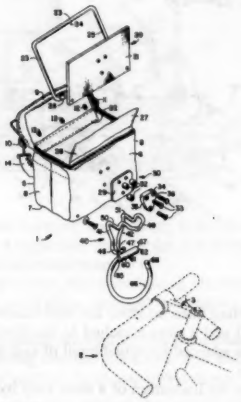
1. A garment hanger for displaying upper and lower pieces of women's clothing, comprising in combination:
- a sheet having a periphery formed in a silhouette of a woman's torso with shoulder sections and hip sections;
- a pair of hip slits, one on each hip section for securing to the sheet a side portion of a lower garment piece;
- a pair of shoulder slits, one on each shoulder section, for securing to the sheet a strap of an upper garment piece;
- hook means extending upwardly at the top of the sheet for hanging the sheet;
- an upper aperture located in an upper portion of the sheet; and
- a lower aperture located in a lower portion of the sheet;
- the upper and lower apertures positioned respectively for receiving plastic retainer lines for retaining the upper and lower pieces of the garment with the sheet;
- the hook means comprising:
- a flat hook-shaped member formed of paper and doubled over to provide separate back and front sections, the front section having a pair of flexible tabs adapted for insertion through a pair of slots in the neck section and a pair of slots in the back section, to secure the hook member to the neck section.

4,542,839

BICYCLE HANDLEBAR MOUNTED CARRIER BAG

Edward H. Levine, and F. E. Dixon Newbold, both of Providence, R.I., assignors to Rhode Gear USA, Providence, R.I.

Continuation-in-part of Ser. No. 431,186, Sep. 30, 1982, abandoned. This application Apr. 12, 1984, Ser. No. 599,206
Int. Cl.[4] B62J *7/06*
U.S. Cl. 224—36 **20 Claims**



1. A carrier bag assembly for attachment to a bicycle and the like having a support member comprising
- a collapsible carrier bag having front and rear panels adapted to be collapsed toward one another;
- a bag frame positioned within said bag and comprising a rear member and a front member pivotally interengaged with the rear member engaging and partially shaping said rear panel and said front member engaging and partially shaping said front member; and
- a bracket assembly comprising a bracket, a securing member and a bracket engaging member, said bracket shaped to engage said support member and having means for engaging said bracket engaging member, said bracket engaging member shaped to detachably receive said bracket and means securing said bracket engaging means to said bag frame, and said securing member interengaging said bracket and said support member to secure said bag against movement relative to said support member and wherein the bracket engaging means is positioned adjacent the outer surface of said rear panel and comprises a V shaped member spaced from said rear panel and forming at least in part a V shaped channel, and said bracket comprises a member having a pair of legs having a section thereof in V shaped relation adapted to detachably engage said V shaped channel.

16. In a carrier bag assembly for attachment to a bicycle and the like having a support member, the carrier bag assembly having a carrier bag, a bracket shaped to engage said support member, means connected to said bracket for removably securing said bracket to said support member and means connected to said carrier bag for releasably fastening said bag to said bracket, the improvement comprising,
- a V-shaped member adapted to be releasably inserted into said bracket,
- means for securing the apex of said V-shaped member to said bag at a fixed distance from the outer surface of said carrier bag; and
- means for movably securing the arms of said V-shaped

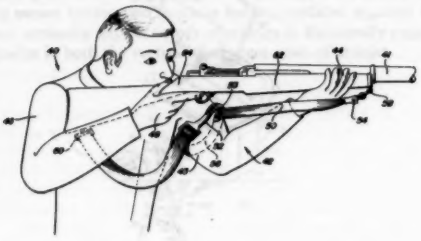
member to the rear surface of said carrier bag, said V-shaped member having a notch in each of said arms for engaging said bracket when said V-shaped member is inserted into said bracket.

4,542,840

SLING HOOK

John T. Pepper, Sr., 5208 Varnum St., Bladensburg, Md. 20710, and Brian A. Felter, 1818 Taylor Ave., Ft. Washington, Md. 20744

Filed Feb. 24, 1984, Ser. No. 583,202
Int. Cl.[4] F41D *11/00*
U.S. Cl. 224—150 **14 Claims**



1. A sling hook adapted for attachment to a long gun having a forend and a sling attached to the forend comprising:

means adapted for attachment of said sling hook to the sling; and

means for formation of a sling loop by sling passage around a forend arm of a shooter and capture of the sling between the forend arm and the attachment of the sling to the forend, said loop formation means being connected to said means for attachment and including a hook portion for the capture of the sling.

4,542,841

SEMI-FRONT OPENING HOLSTER

John E. Bianchi; Richard D. E. Nichols, both of Fallbrook, and Richard Gerfen, Murrieta, all of Calif., assignors to Bianchi International, Temecula, Calif.

Filed Feb. 3, 1981, Ser. No. 231,509
Int. Cl.[4] F41C *33/02*
U.S. Cl. 224—193 **1 Claim**

1. A semi-front opening holster comprising a body of leather or leatherlike material formed to define a handgun carrying pouch;

means secured to said body for securing the holster to a belt;

said body defining a top opening for the insertion of a handgun into the holster from the top;

said body at the upper rear thereof defining a pouch region for at least partially enclosing the trigger guard of a handgun when positioned within the holster;

said pouch region including means extending above and over the trigger guard of the handgun whereby a handgun within said holster may not be withdrawn directly upward;

and strap means extendable from one side of the holster to the opposite over the hammer region of the handgun when in position within said pouch, said strap normally urging the handgun rearward in said pouch beneath said last means,

said strap means being partly disengageable to allow the handgun to move forward;

said holster body defining an extension of said top opening along a portion only of the front edge thereof, thereby defining a partial front opening;

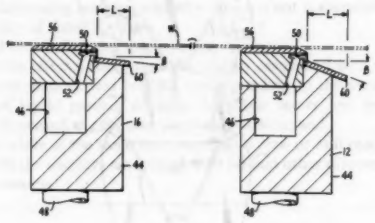
whereby a handgun contained within said holster may be removed by tilting forward to clear the trigger guard from said pouch region disengaging said strap means and thereafter removing the handgun entirely from said holster by an upward or upward-forward movement but said handgun may not be removed by merely an upward or frontward movement including spring means secured to said body biasing the portions of said body defining said extension of the top opening together whereby withdrawal of the handgun requires the overcoming of the spring resistance of said spring means, wherein said spring means comprises a generally U-shaped wire spring with the opening of the U in the region intersection of the top opening and the extension thereof.

4,542,842

PNEUMATIC CONVEYING METHOD FOR FLEXIBLE WEBS

Imants Reba, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Division of Ser. No. 546,779, Oct. 31, 1983, Pat. No. 4,505,412.
This application Nov. 8, 1984, Ser. No. 669,401
Int. Cl.[4] B65H *35/10*
U.S. Cl. 225—2 **8 Claims**



1. A method for conveying a web of thin flexible material from a first location to a second location along a predetermined plane and direction of web movement comprising the steps of:

along the outer edges of said web and under said web, introducing pressurized air at spaced outer positions extending along outer parallel lines between said first and second locations;

substantially simultaneously with the step of introducing pressurized air at said spaced outer positions, introducing pressurized air along the central portion of said web and under the web at spaced inner positions extending along inner parallel lines between said first and second locations;

initially directing the pressurized air from said spaced inner and outer positions in a direction generally parallel to the plane of web movement and at a predetermined first angle relative to the direction of web movement; and

redirecting a portion of said pressurized air in a direction diverging from said plane of movement at a second angle due to the Coanda effect, said angle being defined by the plane of movement and a flow attachment surface, the first angle at said outer positions being greater than the first angle at said inner positions and the second angle at

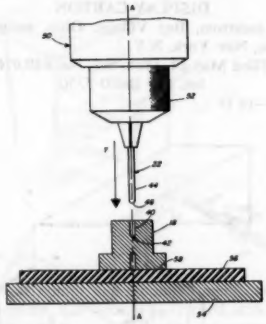
said outer positions being greater than the second angle at said inner positions.

4,542,843

METHOD OF FRICTION WELDING A LAMP FEEDTHROUGH ASSEMBLY

Thomas R. Middleton, Peabody, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 27, 1984, Ser. No. 604,564
Int. Cl.[4] B23K *20/12*; H01J *9/18*
U.S. Cl. 228—112 **5 Claims**



1. A method of welding an electric feedthrough assembly for an electric lamp, said feedthrough assembly comprising at least two components, each of said two components being formed from an electrically conductive refractory material, one of said components being a plug, the other of said components being an electrode pin, said plug and said electrode pin having a coefficient of friction between them, said plug having a body with a cavity formed therein for receiving said electrode pin, said electrode pin having a longitudinal axis, said cavity having a longitudinal axis, said plug having a longitudinal axis which is defined to be identical to said longitudinal axis of said cavity, said method comprising the steps of:

(a) applying rotation-resisting means to the first of said components, said rotation-resisting means being effective to inhibit rotation of said first component only when the torque exerted on said first component is less than a threshold value;

(b) rotating the second of said components about its longitudinal axis;

(c) causing said electrode pin to make contact with the surface of said plug within said cavity such that a torque is exerted on said first component by said rotating second component, said torque having a value less than said threshold value, whereby heat from friction is generated within said cavity at the interface between said rotating second component and said stationary first component; and

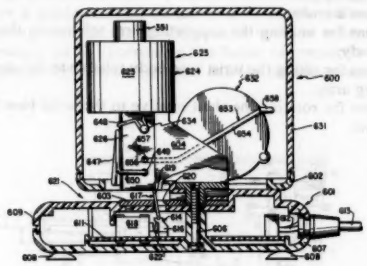
(d) applying increasing pressure on at least one of said components such that intimate contact is attained between said electrode pin and the surface of said plug within said cavity, said pressure being increased until said torque exceeds said threshold value and said first component commences rotating, whereby a permanent bond has been formed between said electrode pin and said plug.

4,542,844

STAPLE FORMING AND DRIVING MACHINE

Paul Olesen, Bellmore; Albert Lensky, Fresh Meadows, and Richard J. Pendzich, Brooklyn, all of N.Y., assignors to Swingline, Inc., Long Island City, N.Y.

Filed Oct. 4, 1982, Ser. No. 432,553
Int. Cl.[4] B27F *7/31, 7/36*
U.S. Cl. 227—7 **4 Claims**



1. A powered staple forming and driving tool for forming staple wires fed from a staple belt into staples and driving such staples into a workpiece comprising:

(a) a parts assembly of a base enclosure having electrical components therein; an anvil plate, an upper housing section and a block head unit;

(b) connector means passing through said base enclosure, anvil plate and upper housing into the block head unit and secured thereto to hold said parts in fixed assembled operative position;

(c) a front sheath positioned resiliently on the block head unit by head unit spring means:

(d) a replaceable cartridge storage and feeding means in turn comprising

(1) a cartridge for storing and feeding a belt of unformed staple blanks;

(2) spring means for holding a positioned cartridge in position;

(3) a pivotable spring feed means unit including a feed finger, spring means for urging the finger against the belt and cam means for rotating the unit to reposition the finger for subsequent feeding;

(e) reciprocating forming and driving means positioned between the front sheath and head unit for forming and driving a particular staple in one stroke;

(f) sheet switch means adjacent the anvil means operable by the insertion of workpiece sheets for stapling; and

(g) power means for moving the forming and driving means downwardly.

4,542,845

ROBOT-TYPE WELDING APPARATUS

Genzo Fuse, Higashimatsuyama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1982, Ser. No. 369,124
Claims priority, application Japan, Apr. 23, 1981, 56-57847[U]; Apr. 23, 1981, 56-57848[U]; Apr. 23, 1981, 56-61487; Apr. 25, 1981, 56-60244[U]
Int. Cl.[4] B23K *9/12*
U.S. Cl. 228—45 **4 Claims**

2. A robot-type welding apparatus comprising:

a stationary main body;

a supporting arm extending from and movable forwardly and rearwardly along the main body and having a front end portion;

an elongated tiltable wrist base body pivotally supported proximate a front end portion thereof on said front end portion of said supporting arm;

a shaft rotatably extending longitudinally through and sup-

ported by said wrist base body, said shaft having a front end;

a wrist member fixed to said front end of said shaft having a front surface;

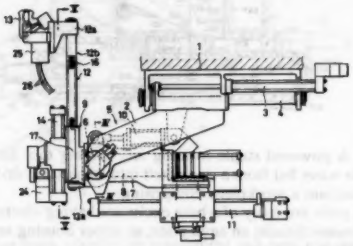
an expansion arm member mounted on said wrist member substantially at right angles to said shaft, said expansion arm member being moveable along its longitudinal axis relative to said wrist member and having a forward end;

a welding gun attached to said forward end of said expansion arm member;

means for moving the supporting arm relative to the main body;

means for tilting the wrist base body relative to the supporting arm;

means for rotating the shaft relative to the wrist base body; and



means for moving the expansion arm member relative to the wrist member;

wherein the expansion arm member comprises a pair of right and left guide rods interconnected at both ends thereof through respective cross members, said guide rods being inserted through a pair of right and left bearing members provided on the front surface of the wrist member as to be supported slideably thereon, one of said guide rods having on one side surface thereof a rack, and said means for moving the expansion arm member comprises a bracket extending laterally from the wrist member having a front portion, a gear provided on said front portion in engagement with said rack, and an operation cylinder driving the gear and provided ahead of the gear.

4,542,846

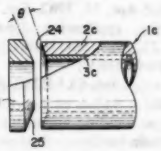
METHOD OF PRODUCING A MULTIPLE-WALL PIPE STRUCTURE WITH ANTICORROSION END PROTECTION

Shigetomo Matsui, Higashiosaka; Toshio Atsuta, Akashi, and Shouji Toma, Kakogawa, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Division of Ser. No. 358,793, Mar. 16, 1982, abandoned. This application Dec. 30, 1983, Ser. No. 567,315

Int. Cl.⁴ B23P *11/02*

U.S. Cl. 228—112 **3 Claims**



1. A method of producing a multiple-wall pipe structure comprising two pipes tightly fitted one within the other, the inner one of said pipes being of a corrosion-resistant metal and the outer one of said pipes being of a noncorrosion-resistant metal, and a pair of anticorrosion rings of a corrosion-resistant metal integrally attached to opposite ends of said pipes so as to cover at least the end faces of said pipe of the noncorrosion-resistant metal, said method comprising the steps of:

providing said two pipes in said tightly fitted manner;

providing said anticorrosion rings;

bringing each said anticorrosion ring into face-to-face pressing contact against the respective end faces of said pipes, while revolving each said ring about its center axis, thereby friction-welding said ring to said end faces of said pipes; and

preventing inward crimping and separation of the end of said inner pipe away from said outer pipe during said friction-welding by internally chamfering said end faces of said pipes and externally chamfering the end of said anticorrosion ring, such that said chamfered end of said anticorrosion ring fits into said chamfered end faces of said pipes.

4,542,847

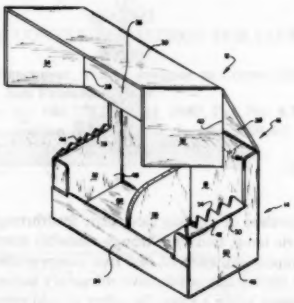
DISPLAY CARTON

Robert O. Lindstrom, Bay Village, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed May 14, 1984, Ser. No. 610,076

Int. Cl.⁴ B65D *5/50*

U.S. Cl. 229—16 D **2 Claims**



1. A carton blank adaptable for folding into a generally rectangular hexahedron shape having both shipping and display modes, for shipping and displaying a plurality of rectangular, thin relatively flexible pouches, said pouches having graphics on the front sides thereof and being stackable in a generally upright, in-file fashion in the carton, comprising:

a rectangular back panel comprising, in a clock-wise direction, first, second, third and fourth edges;

ell-shaped side panels attached along fold lines to the opposite first and third edges, the lower legs of said side panels extending outwardly from the back panel and having lower edges generally aligned with the back panel second edge;

a generally rectangular bottom outer panel attached along a fold line to the back panel second edge;

each side panel comprising a tab portion parallel but spaced from said lower edges and having a serrated free edge, said tab portion being foldable relative the side portion to engage said pouch edges when the carton blank is folded to its display mode and the pouches are in place in the carton;

said serrated free edge being machine or die cut;

a generally rectangular top panel connected along a fold line to the back panel fourth edge;

a generally rectangular front panel having in a clockwise direction first, second, third and fourth edges wherein the front panel second edge is connected along a fold line to the top panel edge opposite said back panel fourth edge;

overlying side panels connected to the front panel along said

front panel first and third edges adapted to overlie said ell-shaped side panels when the blank is in a closed shipping mode;

overlying bottom panels connected along fold lines to the ell-shaped panels lower edges adapted to overlie the bottom panel when the blank is in a closed shipping mode.

further including a scored line for separation of the top and back panels and conversion of the carton blank from a shipping mode to a display mode.

4,542,848

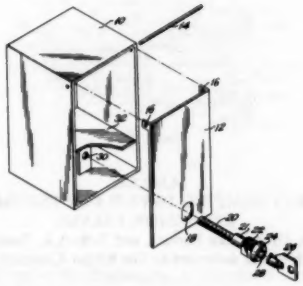
STRONG BOX

Raymond A. Peters, 521 W. 159th St., New York, N.Y. 10032

Filed Jun. 15, 1984, Ser. No. 621,231

Int. Cl.[4] E05G *1/00*

U.S. Cl. 232—4 R **1 Claim**



1. A strong box comprising a compartment having an outwardly opening door, said door, when closed, striking the edge of a wall dividing the interior of the box into upper and lower compartments, the wall preventing the door from penetrating the box, said door having an opening for an elongated locking device which includes an assemblage comprising a key receiving head, a locking mechanism and an elongated threaded arm, said assemblage being one piece, the threaded arm and locking mechanism dimensioned to penetrate the box through the opening, said assemblage being housed in the lower compartment, the head being flanged to abut the door when the remainder of the locking device is inserted through the opening, the head and locking mechanism being non-rotatably mounted on the door, the threaded arm being rotatable when the locking mechanism is depressed by a suitable key, means within the box for threadedly engaging the threaded arm of the locking mechanism so that when the threaded arm is rotated therein in one direction the door is clamped against the abutment, and when the threaded arm is rotated in an opposite direction the threaded arm will be completely withdrawn from the engaging means to free the door, the key receiving head, locking mechanism and threaded arm being separable as a unit from the remainder of the box.

4,542,849

METHOD AND APPARATUS FOR REGULATING A HEATING INSTALLATION IN PREMISES INCLUDING A PLURALITY OF HEAT GENERATORS

Jacky Pichot, Montereau, and Jacques Oddou, Fontainebleau, both of France, assignors to Electricite de France, Paris, France

Filed Dec. 31, 1984, Ser. No. 687,732

Claims priority, application France, Jan. 9, 1984, 84 00214

Int. Cl.[4] G05D *23/12*; H02J *3/14*

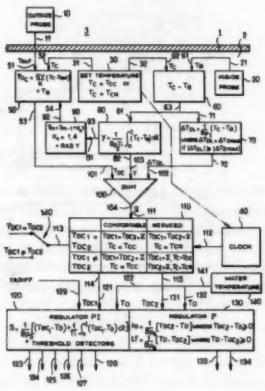
U.S. Cl. 236—1 EB **11 Claims**

1. A method of regulating a heating installation in premises including a plurality of heating generators, wherein the method comprises the steps of:

(i) permanently generating a first signal representative of a base temperature proportional to the difference existing between a set temperature and the instantaneous outside temperature;

(ii) permanently generating a second signal representative of a correction applied to the base temperature, and proportional to the difference between the set temperature and the instantaneous inside temperature of the premises;

(iii) periodically generating a third signal representative of an auxiliary correction proportional to the integration over a predetermined period of time of the differences existing between the set temperature and the inside temperature; p1 (iv) correcting the factor of proportionality between the base temperature and the difference existing



between the set temperature and the outside temperature on the basis of the third signal at the end of each predetermined period;

(v) permanently generating a fourth signal representative of a reference temperature corresponding to summing the first three signals;

(vi) determining a fifth signal in a proportional-integral type regulator sensitive to the difference existing between the reference temperature and the temperature of the heated fluid as it leaves the heat generators; and

(vii) detecting the passage of the fifth signal through successive predetermined thresholds corresponding to respective commands for putting the said generators into service.

4,542,850

CENTRAL HEATING METHOD AND PLANT

Chevalier Gilbert, 46 rue du Château, F-59283 Raimbeaucourt, France

PCT No. PCT/FR82/00100, § 371 Date Feb. 22, 1983, § 102(e) Date Feb. 22, 1983, PCT Pub. No. WO83/00063, PCT Pub. Date Jan. 6, 1983

PCT Filed Jun. 17, 1982, Ser. No. 474,575

Claims priority, application France, Jun. 22, 1981, 81 12987

Int. Cl.[4] F23N *1/08*; F25B *27/02*

U.S. Cl. 236—20 R **8 Claims**

1. A central heating plant for supplying a heat transfer fluid to an exchanger network, said plant including at least one thermodynamic device, comprising

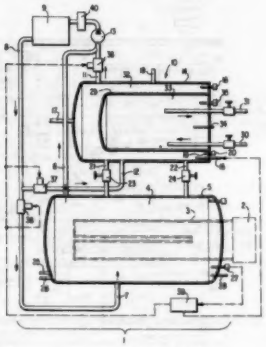
an exchanger-accumulator tank including at least one circuit connected to said thermodynamic device for circulating a cooling fluid, the heat released in said circuit by the condensation of said cooling fluid being recovered in a portion of said heat transfer fluid contained within said exchanger-accumulator tank;

first conduit means for connecting said exchanger-accumula-

tor tank to said exchanger network, said first conduit means having a discharge portion for conducting said heat transfer fluid from said exchanger-accumulator tank to said exchanger network and a return portion for conducting said fluid from said exchanger network to said exchanger-accumulator tank;

an auxiliary boiler containing another portion of said heat transfer fluid;

second conduit means for connecting said auxiliary boiler to said exchanger network, said second conduit means having a discharge portion for conducting said heat transfer fluid from said auxiliary boiler to said exchanger network and a return portion for conducting said fluid from said exchanger network to said auxiliary boiler; and



control means coupled to said first and second conduit means to initiate flow of said heat transfer fluid from said exchanger-accumulator tank to said exchanger network when the temperature of the heat transfer fluid within said exchanger-accumulator tank reaches a predetermined value and to simultaneously discontinue the flow of heat transfer fluid from said auxiliary boiler to said exchanger network, said control means further permitting flow of said heat transfer fluid from said auxiliary boiler to said exchanger network when the temperature of the heat transfer fluid within said exchanger-accumulator tank is below said predetermined value and to simultaneously discontinue the flow of heat transfer fluid from said exchanger-accumulator tank to said exchanger network, said thermodynamic device operating independently of the heating requirements of said exchanger network.

4,542,851

AIR CONDITIONER FOR A COATING BOOTH

Zyouzi Itou, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 30, 1983, Ser. No. 509,382
Claims priority, application Japan, Dec. 18, 1982, 57-222583
Int. Cl.⁴ G05D *21/00*
U.S. Cl. 236—44 C **9 Claims**

1. An air conditioner for a coating booth comprising:

means for drawing air through a filter;

first means for heating the filtered air;

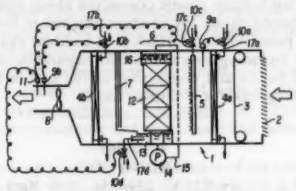
means for atomizing steam into said heated air;

means downstream from said means for atomizing for humidifying said heated air, said means for humidifying including wet walls and recirculating water flowing on said wet walls;

a storage tank for said recirculating water;

second means for heating said recirculating water in said storage tank; and

dew point temperature control means sensitive to a dew point temperature in said coating booth and operatively connected



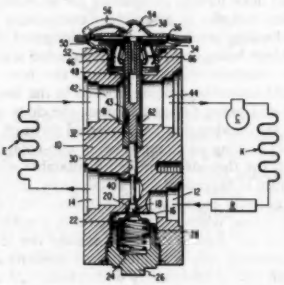
to said second means for heating for maintaining a predetermined dew point temperature in said coating booth.

4,542,852

VIBRATION DAMPING DEVICE FOR THERMOSTATIC EXPANSION VALVES

Charles D. Orth, Lake Forrest, and Robert J. Torrence, Addison, both of Ill., assignors to The Singer Company, Stamford, Conn.

Filed Mar. 5, 1984, Ser. No. 586,169
Int. Cl.⁴ F25B *41/04*
U.S. Cl. 236—92 B **4 Claims**



1. In a thermostatic expansion valve of the type having a valve body and a valve actuator mechanism slidably secured in said valve body, an arrangement for damping vibration of said actuator mechanism comprising:

means interposed between said valve body and said actuator mechanism for applying a constant force therebetween in a direction normal to the direction of sliding motion of said actuating mechanism including a unitary ring shaped member of spring metal fixedly secured to one of said valve body or said actuator mechanism, said member having a plurality of fingers extending in the direction of said sliding motion and biased into force applying contact with the other of said valve body or said actuator mechanism and a plurality of gripping tabs extending in the direction of said sliding motion but across the ring shaped member from said fingers into gripping engagement with said one of said valve body or said actuator mechanism.

4,542,853

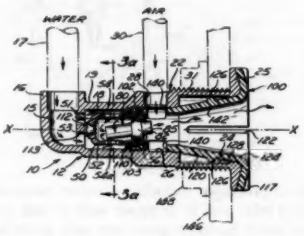
FLUID VALVE WITH DIRECTIONAL OUTLET JET OF CONTINUOUSLY CHANGING DIRECTION

Harvey E. Diamond, 12952 Woodridge St., Studio City, Calif. 91604

Continuation-in-part of Ser. No. 457,961, Jan. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 218,487, Dec. 22, 1980, abandoned. This application Jan. 20, 1984, Ser. No. 572,702

Int. Cl.[4] B05B 3/16, 7/00

U.S. Cl. 239—383 50 Claims



1. A fluid valve for discharging a directional outlet fluid stream of continuously changing direction comprising:

a valve body having a first fluid inlet means and having a valve bore therethrough, said valve bore having a longitudinal axis and a fluid outlet means;

an elongated rotor body mounted within said valve bore and having a rotor bore passing therethrough, said rotor body being mounted for movement within said valve bore to enable displacement of said rotor bore with respect to said longitudinal axis of said valve bore, said rotor bore having a rotor bore inlet and rotor bore outlet, said rotor bore inlet beng in fluid communication with said first fluid inlet means and said rotor bore outlet having its outer end communicating with said fluid means of said valve body; and

a rotor chamber having fluid inlet port means in communication with said first fluid inlet means, said fluid inlet port means of said rotor chamber being radially offset with respect to said longitudinal axis of said valve bore, and said radially offset fluid inlet port means of said rotor chamber being in communication with said rotor body whereby at least a portion of fluid entering said first fluid inlet means initially passes into said radially offset fluid inlet port means of said rotor chamber and thence exerts external force on said rotor body to cause movement of said rotor body and displacement of said rotor bore with respect to said longitudinal axis of said valve bore, and whereby fluid also passes through said rotor bore inlet into said rotor bore, and into said fluid outlet means of said valve body, as a directional outlet stream of predetermined continuously changing direction, as determined by the displacement of said rotor bore; and

positioning means for adjustably positioning said rotor chamber along the direction of the longitudinal axis of said valve bore whereby to adjust the rate of movement of said rotor body by increasing or decreasing the amount of fluid entering said first fluid inlet means and conversely decreasing or inceasing the amount of fluid entering said radially offset fluid inlet port means of said rotor chamber.

4,542,854

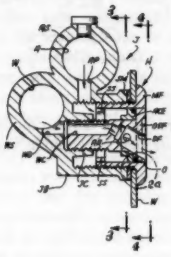
WHIRLPOOL JETS

Cleo D. Mathis, 1808 Potrero Ave., South El Monte, Calif. 91733

Continuation of Ser. No. 315,491, Oct. 27, 1983, abandoned. This application Jun. 11, 1984, Ser. No. 619,484

Int. Cl.[4] B05B 15/08; A47K 3/10

U.S. Cl. 239—587 27 Claims



1. A whirlpool jet housing comprising a body portion having a water inlet means including an aperture for conveying water into the body portion and an air inlet means including an aperture for conveying air into the body portion, a combination orifice and directional flow element of a unitary construction having an orifice at one end thereof arranged adjacent said water aperture to receive water directly therefrom and a directional flow at the opposite end thereof for discharge of water therefrom and with a longitudinally defined water conduit extending between the two ends, said water conduit having a preselected diameter at the orifice end and terminating at said directional flow end, the portion of the water conduit at the directional flow end having a water channel outlet that is angularly defined relative to the longitudinally defined water conduit and of a greater diameter than said preselected diameter for defining the directional flow and for inducing air into said angularly defined water channel by venturi action, said combination orifice and directional flow including aperture means for said angularly defined water conduit for conveying air therethrough by venturi action for mixture with the water in said conduit and to cause the mixed air and water to be discharged from the directional flow in a preselected direction, said air aperture means being in communication with said air inlet means, and a head adapted to be secured to the body portion so as to secure the whirlpool jet to a wall of a water vessel or the like through an aperture in the wall when the head and body are arranged on opposite sides of said wall without any additional securing devices, said head including an internally defined segment means for receiving and coacting with a complementary shaped wrench for tightly securing the body portion and head to said wall by means of an aperture through said wall.

4,542,855

AGRICULTURAL SPRAYING DEVICE

Robert E. Stacey, Sellicks Hill, Australia, assignor to Micro Spray (Australia) Pty. Ltd., Hackham, Australia

Filed Nov. 9, 1983, Ser. No. 550,205

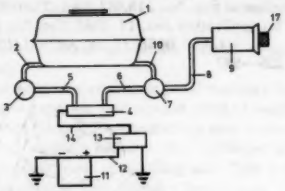
Claims priority, application Australia, Nov. 12, 1982, PF6771

Int. Cl.[4] B05B 5/00

U.S. Cl. 239—690 4 Claims

2. An agricultural spraying device having a supply tank for a liquid being sprayed, and in which means are provided to pass liquid through an electrostatic unit to charge the liquid, the iquid passing through a non-electrically conductive line to an atomizer whereby charged atomized particles are attracted to plants or crops being sprayed, characterized by a pump to withdraw the liquid from the supply tank and pass liquid through the electrostatic unit to the atomizer, a regulator

by-pass valve situated in the spray line between the electrostatic unit and the atomizer, a return line connected between the regulator by-pass valve and tank whereby charged liquid is



recirculated through the tank to thereby charge the liquid in the tank to ensure that the liquid as it passes to the atomizer is fully charged.

4,542,856

HAMMER BREAKER

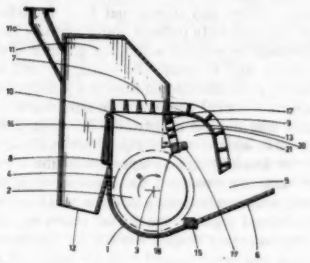
Manfred Adolph, Langenfeld, Fed. Rep. of Germany, assignor to Lindemann Maschinenfabrik GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,812

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3233985

Int. Cl.⁴ B02C *13/09*

U.S. Cl. 241—69 **18 Claims**



1. In a hammer breaker for breaking and crushing scrap material, said hammer breaker comprising a housing, a hammer rotor rotatably mounted within said housing, said rotor having a plurality of hammers pivotally mounted thereon, an inlet to said housing for the material to be broken and crushed, a passage defined by said housing for receiving broken and crushed material from said hammer rotor, a material outlet from said passage, and a material classifying grate covering said outlet, the improvement wherein said hammer breaker includes means dividing said passage into at least two chambers arranged in series in the direction of rotation of said rotor, and located radially outwardly from said rotor, said passage comprising a first chamber and a second chamber following said first chamber in the direction of rotation of said rotor, and said first chamber contains said material classifying grate and said second chamber opens into said inlet to said housing at a location spaced angularly from said first chamber.

4,542,857

FOOD PROCESSOR

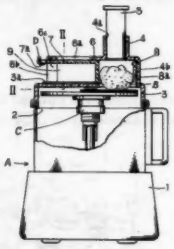
Chosei Akasaka, 5-4-35-903 Minami-Aoyama, Minato-ku Tokyo, Japan

Filed Feb. 25, 1983, Ser. No. 469,637

Claims priority, application Japan, Mar. 8, 1982, 57-36071; May 14, 1982, 57-81092

Int. Cl.⁴ B02C *18/22*

U.S. Cl. 241—37.5 **10 Claims**



1. A food processor including a cover comprising:

(a) a first inlet port in an upper wall of said cover;

(b) said cover having a guide box, said guide box having an interior in communication with said first inlet port and said guide box having an upper wall, a lower wall and side walls, said upper wall of said guide box being part of said upper wall of said cover;

(c) a second inlet port in said upper wall of said guide box, said second inlet port being adjacent to said first inlet port and having a width larger than a width of said first inlet port;

(d) a third inlet port of said cover, said third inlet port having a width slightly greater than said width of said second inlet port, said third inlet port being coaxial and in communication with said first port;

(e) a separate slidable withdrawable storage unit which slides inside said guide box, said storage unit having a handle at one end of said unit and a fourth inlet port at another end of said unit, said fourth inlet port having a width substantially equal to said width of said second inlet port and said unit having right and left side plates for guiding said unit from a first position to a second position, so that when said unit is at said second position said fourth inlet port is aligned with said first inlet port and coincides with said third inlet port, and when said unit is at said first position said fourth inlet port is aligned only with said second inlet port; and

(f) a pusher for urging material through said third inlet port and onto a rotatable blade.

4,542,858

ROTATABLE ELECTRIC CABLE CONNECTING SYSTEM

David R. Manges, Fulton, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 23, 1984, Ser. No. 613,140

Int. Cl.⁴ H02G *11/00*; **B65H** *75/48*

U.S. Cl. 242—54 R **12 Claims**

1. A cable reel assembly for providing electrical connection between two structures having relative movement therebetween, comprising in combination:

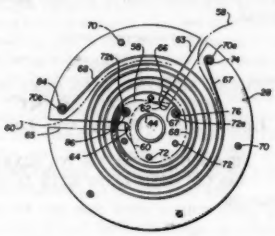
first and second support members having mutually opposing inner surfaces spaced apart a predetermined constant distance, said support members being centered about a common axis and wherein said first support member is rotatable about said common axis while said second support member remains fixed relative to said first member;

a first plurality of means projecting outwardly from the

inner surface of said first support member and being arranged in a generally circular configuration in relatively close proximity to and around said common axis;

a second plurality of means projecting outwardly from the inner surface of said second support member and arranged in a generally circular configuration around said common axis at a distance substantially greater than said first plurality of band stop means;

at least one elongated flexible band member located between said opposing inner surfaces of said support members and being attached at one end to one of said first plurality of means and at the other end to one of said second plurality of means whereby rotation of said first support member



causes said band member to coil and uncoil depending upon the direction of rotation of said first support member;

a second elongated flexible band member located in substantial parallel arrangement with said first recited band member between said support members and being attached at one end to another of said first plurality of means and at the other end to another of said second plurality of means; and

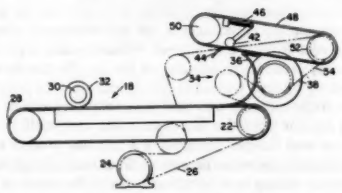
electrical connecting cable means secured to said at least one flexible band member and having thereby a rotatable moving end located at said one end of the member and a stationary end at said other end of the flexible band member.

4,542,859

METHOD AND APPARATUS FOR ROLLING MATS

Roland W. Gerstenberger, 5 Chipmunk Rd., Asheville, N.C. 28804

Filed May 23, 1983, Ser. No. 497,110
Int. Cl.⁴ B65H *17/12*
U.S. Cl. 242—67.2 **5 Claims**



1. An apparatus for rolling a flat flexible workpiece, having a leading edge, comprising:

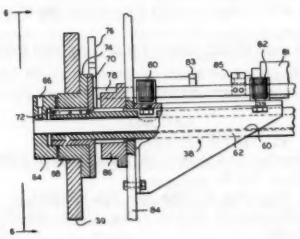
a conveyor section; a rolling section including a lower portion; said conveyor section for transporting said workpiece at a predetermined linear speed in its flattened condition to said rolling section; said lower portion of said rolling section including a plurality of spaced apart curved first fingers; said plurality of curved first fingers located in a horizontal row adjacent one another; each of said curved first fingers having feed-in and feed-out portions located on opposing ends of said curved first fingers; said feed-in portions located adjacent one end of said conveyor section for receiving said workpiece from said conveyor section; said first fingers each substantially simultaneously adapted to contact the leading edge of said workpiece; a plurality of spaced apart rollers driven by a common drive means; said rollers located in a horizontal row adjacent one another; at least a portion of one of said rollers located between at least two adjacent curved first fingers and between said feed-in and feed-out portions of said adjacent first fingers; said rollers each substantially simultaneously adapted to contact the leading edge of said workpiece; said rollers having substantially non-skid outer surfaces to grip said workpiece; said rollers adapted to contact the workpiece to drive it along said first fingers for forming said flat workpiece into a rolled workpiece; an upper portion of said rolling section; said upper portion including a second plurality curved fingers detached from said first plurality of fingers but forming approximately a continuation of the arc of said first plurality of fingers, said second fingers biased inwardly toward said lower portion to insure a tight roll yet will move outwardly away from said lower portion as the circumference of the roll increases; said second fingers being in a horizontal row and being mounted on a common substrate so that said second fingers will all move in a simultaneous fashion; an open area between one end of said second fingers and said conveyor section; said open area being free from any curved fingers.

4,542,860

HUB LOCK FOR COIL FORMER SUPPORT MEANS

Richard M. Hecht, Chicago, and Robert G. Seaverns, Northbrook, both of Ill., assignors to Gasway Corporation, Chicago, Ill.

Filed Jun. 21, 1983, Ser. No. 506,300
Int. Cl.⁴ B65H *75/02*
U.S. Cl. 242—72 R **7 Claims**



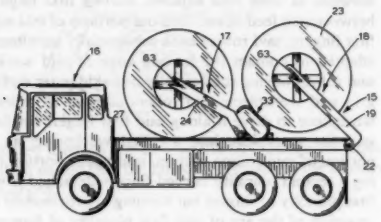
1. A hub lock comprising a rotatable drive spindle means having a metal tube with a telescoping metal shaft slidably positioned therein, the tube and shaft turning as a unit, a pressure plate positioned on and attached to the end of said sliding shaft, a flange positioned on and attached to said tube, a resilient elastomer block positioned between said pressure plate and said flange to be squeezed therebetween when said shaft is retracted and to be relaxed when said shaft is extended, a plastic wheel-like former having a central mounting hole, the internal cross section of said hole and the external cross section of said elastomer block having complementary substantially polygonal cross sections, whereby said hole fits over said elastomer block, said block being tightly forced against the interior wall of said center hole when block is squeezed for resiliently transmitting a driving force from said rotatable spindle and said polygonal elastomer block to said former while protecting the plastic from damage by said metal.

4,542,861

REEL DRIVE MECHANISM

Ronald L. Barnes, West Des Moines, Iowa, assignor to Albert L. Anderson, Cumming, Iowa

Filed Feb. 6, 1984, Ser. No. 577,052
Int. Cl.[4] B65H *17/08, 75/40*
U.S. Cl. 242—86.5 R **4 Claims**



1. A reel drive mechanism for a reel handling apparatus mountable on the chassis of a vehicle and including pivoted lift arms having reel supporting means at the free ends thereof and pivotally supported adjacent the rear end of the vehicle for pivoted up and down movement from first reel loading positions inclined downwardly and rearwardly from said rear end to second reel transport positions projected upwardly and forwardly from said rear end, said mechanism comprising:

(a) a base frame mounted transversely of said chassis forwardly of said lift arms in the second positions therefor;

(b) a transversely extended upright tiltable frame structure pivotally mounted on said base frame for upwardly and forwardly tilting movements about the longitudinal axis thereof,

(c) a pair of roller assemblies rotatably mounted on said tiltable frame to opposite sides of said longitudinal axis whereby, when said lift arms with a reel supported thereon are movable to the second positions therefor, said reel is initially moved into frictional engagement with a first one of said roller assemblies to tilt said tiltable frame for frictional engagement of the reel also with the second one of said assemblies; and

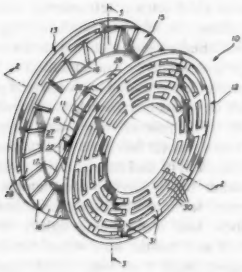
(d) means on said tiltable frame for driving said roller assemblies.

4,542,862

HAND HELD TROTLINE REEL

Robert G. Romike, and Vernon H. Byrd, both of 8726 Dexter, Houston, Tex. 77075

Filed Feb. 6, 1984, Ser. No. 577,067
Int. Cl.[4] 242 *96, 84.2 R, 118.4, 118.61;* **43** *57.3*
U.S. Cl. 242—96 **15 Claims**



1. A reversible hand held trotline reel for receiving a trotline comprising a main line having a series of hook carrying leaders sequentially positioned thereon, said reel comprising:

a hollow cylindrical hub, having a central opening, open on both ends permitting the hub to be held and rotated on one's hand and for receiving a trotline wound thereon,

opposing flange members secured on each end of said hub,

a generally disc shaped plate member secured on said hub and having hook retaining means comprising a plurality of equally spaced radially extending slots therein for receiving and releasably retaining the hook portions of the fishhooks of the trotline, and

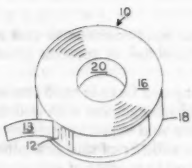
said plate being positioned between said flanges and adjacent one flange and spaced a distance therefrom sufficiently close to prevent insertion of the fingers therebetween, thus providing protection to the user against injury from the hooks.

4,542,863

PIPE-THREAD SEALING TAPE REEL WITH TAPE RETARDING ELEMENT

Edwin L. Larson, 2501 Wellesley Ave., Los Angeles, Calif. 90064

Filed Jul. 23, 1984, Ser. No. 633,611
Int. Cl.[4] B65H *75/16;* **E21B** *31/00*
U.S. Cl. 242—96 **3 Claims**



1. An improvement in a pipe-thread sealing tape reel, in which the reel comprises a first side flange and a second side flange, and a hollow hub mounting said first side flange and said second side flange at opposite ends thereof, whereby the hollow interior of said hub allows for the grasping thereof by fingers, or the like, each of said first side flange and said second side flange projecting from the outer circumferential surface of said hub about the entire circumference thereof so as to define a retaining volume in which tape is wound for storage and dispensing therefrom, said improvement comprising:

a tape retarding means mounted between and to said first side flange and said second side flange at a portion of each near the outer peripheral surface thereof, said tape retarding means spanning the space between said side flanges, whereby tape unwound from said reel may be prevented from further dispensing upon the accidental dropping of the reel from a user's hand, whereby said tape retarding means prevents unwinding of the tape by the fact that the end of the tape wound to the thread-end of a pipe provides an anchored end, and said tape retarding means provides an anchor point for the tape to the reel itself;

each of said flanges comprising a circular groove extending around the inner surface of each said side flange, said inner surface facing in a direction toward the other of said first and second side flanges; said circular groove having a radius of curvature centered at the central longitudinal axis of said hub greater than the radius of said hub; said tape retarding means comprising means for riding in each said groove of each said side flange;

said means for riding comprising a first tongue extension for insertion into one of said grooves and a second extension for insertion into the other of said grooves, each of said tongue extensions having a thickness at at least one portion thereof slightly less than the width of the groove in which it rides, said thickness of each said tongue extension being taken in a first direction from the outer periphery of

its respective side flange toward the center of the hub, and said width of said groove being taken in said first direction, also, whereby said tongue extensions provide frictional engagement with the interior of said grooves to allow positioning of said tongue extensions, and, therefore, said retarding means, at a desired location about said reel, so that said retarding means provides sufficient frictional engagement with said side flanges to keep said retarding means at its angular location during accidental dropping of said reel to prevent unwinding of the tape;

said tape retarding means further comprising a main body portion having an arcuate shape, and having a first end and a second end adjacent said first and second side flanges, respectively; said first tongue extension projecting from said first end of said main body portion, and said second tongue extension projecting from said second end of said main body portion in a second direction parallel to the longitudinal axis of said hub; the length of said retarding means being measured from the end of said first tongue extension to the end of said second tongue extension, said ends of said tongue extensions being mounted in said grooves and lying closest to the outer side surface of its respective side flange facing away from the other of said side flanges, said length being greater than the distance between said circular grooves taken along a line parallel to said longitudinal axis of said hub; and

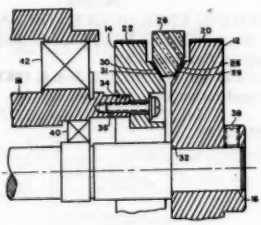
said first end of said main body portion being spaced from the inner face of said first side flange to which it is connected by said first tongue extension, and said second end of said main body portion being spaced from the inner face of the portion of said second side flange to which it is connected by said second tongue extension, so that a first and a second gap is provided between the ends of said main body portion and the inner faces of said first and second side flanges, respectively wherein the locking projections of a conventional cover portion used for storing the reel during storage and non-use is received.

4,542,864

BRAKE DEVICE FOR COAXIAL REEL TAPE RECORDERS

David G. Hart, Sarasota, Fla., assignor to Fairchild Weston Systems, Inc., Sarasota, Fla.

Filed Sep. 24, 1982, Ser. No. 423,329
Int. Cl.⁴ G11B *15/32;* **B65H** *23/06*
U.S. Cl. 242—193 **3 Claims**



1. Braking apparatus for a coaxial reel tape recorder comprising:

a pair of tape reels disposed adjacent one another and mounted to a pair of drive shafts disposed concentric each other on one side of a chassis, the drive shafts having portions extending through an opening in the chassis;

a pair of drive wheels disposed adjacent one another and mounted to the portions of the drive shafts which extend through the chassis and on a side opposite from the tape reels with the drive wheels having opposed angled faces together forming a composite chamfered braking surface;

electrical drive means for driving the drive wheels;

a single brake pad arranged adjacent the pair of drive wheels on the side of the chassis opposite the tape reels, the brake pad having complememtary angled faces thereon for engaging the composite chamfered braking surfaces of the drive wheels; and

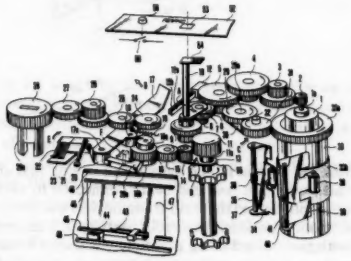
means connected to the brake pad for selectively wedging the angled faces of the brake pad wedge against the composite chamfered braking surfaces of the drive wheels and thereby simultaneously braking both drive wheels.

4,542,865

AUTOMATIC FILM REWINDING DEVICE

Tateo Yamada; Hiroyuki Kimura, both of Kanagawa, and Hideo Taka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1983, Ser. No. 554,259
Claims priority, application Japan, Nov. 25, 1985, 57-206301; Feb. 28, 1983, 58-30869
Int. Cl.⁴ G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—205 **15 Claims**



1. An automatic film rewinding device for a camera, comprising:

(a) winding means for automatically winding a film;

(b) rewinding means for automatically rewinding the film;

(c) an automatic reversing circuit which electrically detects the end of the film winding operation of said winding means when said film comes to the end of the roll and actuates said rewinding means; and

(d) mechanical memory means for mechanically memorizing that the film is under a rewinding operation, said memory means being arranged to cause said rewinding means to perform the rewinding operation until completion thereof.

4,542,866

AIRCRAFT WITH DIRECTIONAL CONTROLLING CANARDS

Allan L. Caldwell; Richard Hardy, both of Seattle, and Frank D. Neumann, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1983, Ser. No. 537,487
Int. Cl.⁴ B64C *5/04, 5/12, 5/16*
U.S. Cl. 244—45 A **9 Claims**

1. An aircraft, comprising:

a fuselage with a pilot's cockpit, and having an upwardly narrowing substantially triangular cross sectional configuration in the region of the cockpit;

a pair of wings, one on each side of the fuselage;

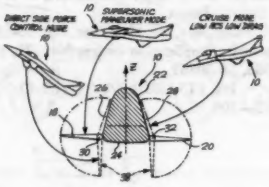
a tail section;

a pair of canards, one mounted on each side of the fuselage forwardly of each wing and adjacent the cockpit region; and

a means for mounting said canards to said fuselage for two-degree freedom of movement, with one degree including canard vertical swinging movement between a retracted position flush against the side of the fuselage and a downwardly extending position substantially parallel to the "z" axis of the aircraft, and with the second degree including

canard rotational incidence changing, wherein said means mounts each canard to said fuselage so that the inboard portions of said canards remain substantially adjacent said fuselage during said vertical swinging and incidence changing movement, said means for each canard comprising:

a powered hinge having an inner portion connected to the fuselage and an outer portion pivotally connected to said inner portion, said outer portion being movable to a selected position relative to said inner portion, and wherein said outer portion may be held in said selected position; and



a trunnion housed in said canard and having first and second ends, with said first end being connected to said movable outer portion so that said trunnion vertically swings when said outer portion pivots relative to said inner portion, and with said canard being pivotally connected to said second end in a manner so that the inboard portion of said canard may remain substantially adjacent said fuselage during vertical swinging and incidence changing movement, and further, said trunnion including actuator means operable to pivot said canard relative to said trunnion, for changing the incidence position of said canard, and for holding the canard in a selected incidence position.

4,542,867

INTERNALLY COOLED HOLLOW AIRFOIL

Robert L. Memmen, Juno Isles, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 31, 1983, Ser. No. 462,496
Int. Cl.⁴ B64C *3/36*
U.S. Cl. 244—117 A **6 Claims**

1. An air foil comprising:

a pressure side wall having an inside surface;

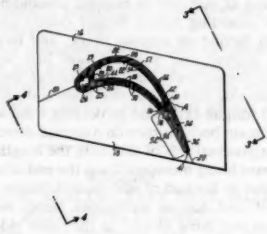
a suction side wall having an inside surface, said pressure and suction side walls defining an external airfoil shape and defining a longitudinally extending cooling air cavity therebetween, said cavity having a longitudinally extending rearward end, said side walls also defining a trailing edge portion immediately rearward of said cavity, said trailing edge portion including means defining cooling air passageways therethrough having inlet means communicating with said rearward end of said cavity;

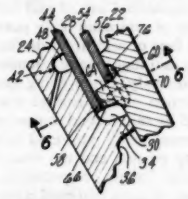
a first baffle sheet within said cavity bonded to said inside surface of said suction side wall, said first sheet having an inwardly facing surface and a longitudinally extending rearward edge portion at said rearward end of said cavity;

a second baffle sheet within said cavity bonded to said inside surface of said pressure side wall, second sheet having an inwardly facing surface and a longitudinally extending rearward edge portion at said rearward end of said cavity and spaced from said rearward edge portion of said first baffle sheet along the length thereof defining an outlet from said cavity;

a plurality of longitudinally spaced apart first pedestals integral with said suction side wall opposite said rearward edge portion of said second baffle sheet, said first pedestals extending from said inside surface of said suction side wall substantially to said inwardly facing surface of said rearward edge portion of said second baffle sheet and not secured to either said second baffle sheet or said pressure side wall; and

a plurality of longitudinally spaced-apart second pedestals integral with said pressure side wall opposite said rearward edge portion of said first baffle sheet, said second pedestals extending from said inside surface of said pressure side wall substantially to said inwardly facing surface of said rearward edge portion of said first baffle sheet and not secured to either said first baffle sheet or said suction side wall;





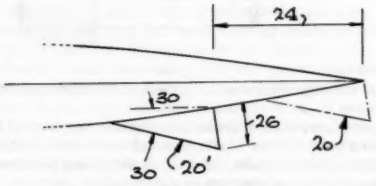
whereby said first and second pedestals prevent said cavity outlet from closing substantially should either or both of said first and second baffle sheet rearward edge portions come unbonded from their respective side walls.

4,542,868

TRAILING EDGE DEVICE FOR AN AIRFOIL

James A. Boyd, Westlake Village, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Continuation of Ser. No. 501,318, Jun. 6, 1983, abandoned. This application Dec. 18, 1984, Ser. No. 682,499
Int. Cl.⁴ B64C *23/00, 21/10*
U.S. Cl. 244—198 **3 Claims**



1. An improvement for a transonic airfoil of an aircraft or the like, said airfoil having a chord length defined by the leading and trailing edge of the airfoil, the improvement comprising:

a wedge-shaped member rigidly mounted to the underside of the airfoil between 0 percent and 1.0 percent from the trailing edge, having a height of between 0.4 percent to 0.8

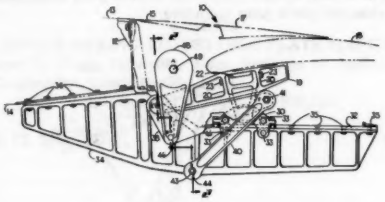
percent of the chord of the airfoil; and further having a wedge angle to the chord of between 15° and 45°.

4,542,869

FLAP MECHANISM

Gerald T. Brine, La Palma, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 23, 1983, Ser. No. 507,281
Int. Cl.⁴ B64C *3/50*
U.S. Cl. 244—216 **6 Claims**



1. An extending and retracting mechanism for a trailing edge flap system attached to an aircraft wing, said wing having fixed structure, comprising:

track means mounted on said fixed structure of said wing;

carriage means engaging said track means for sliding movement on said track;

at least a main flap segment pivotally attached to said carriage means;

a four-bar linkage, having four pin connected links, with a first link grounded to structure and a second link opposite said first link, pin connected to said flap so as to make said second link a free ternary link and said four-bar linkage combines with said track and carriage to form a six-bar linkage of the Stephenson III type; and

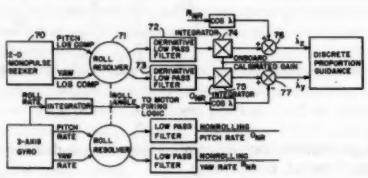
drive means for rotating one link of said four-bar linkage so that said carriage moves on said track translating said flap while rotating said flap about said pivotal connection to said carriage means.

4,542,870

SSICM GUIDANCE AND CONTROL CONCEPT

W. Max Howell, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 8, 1983, Ser. No. 521,490
Int. Cl.⁴ F41G *7/22*
U.S. Cl. 244—3.15 **2 Claims**



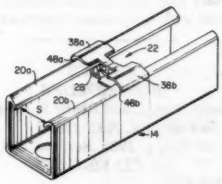
1. In a missile guidance system for guiding a spin stabilized controlled missile towards a target by proportional navigation, the improvement comprising the method of utilizing fixed body mounted sensors for detecting the relative direction of the target and producing an output signal proportional thereto; generating a rate signal which is proportional to body angle rates of the missile; utilizing filters to separate body motions from target motions in the rate signal; producing a filtered rate signal proportional to the body angle rates; combining the filtered rate signal with the output signal of the sensors for deriving an error signal with respect to guidance of the missile towards the target; and utilizing nutational motion to calibrate said sensors.

4,542,871

CLAMP FOR MOUNTING CABLE ON CHANNEL SUPPORT

William A. Fortsch, Bernardsville, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Feb. 14, 1983, Ser. No. 466,395
Int. Cl.⁴ F16L *3/08*
U.S. Cl. 248—73 **20 Claims**



1. A clamp for attaching an article, such as a cable or the like, transversely across a support channel having spaced inwardly extending flanges along its longitudinal extent and defining an elongate slot therebetween, comprising:

a body for resilient detachable securement to said inwardly extending flanges, said body having a pair of opposed flange receiving openings, each of said openings being defined by an engagement surface adapted to reside within said channel and engage a lower portion of a flange and a contact surface adapted to overlie said channel and contact an upper portion of a flange, at least one of either engagement surface or said contact surface of each opening being flexible, said engagement surface and said contact surface of each opening being spaced for resilient interference fit with a flange; and

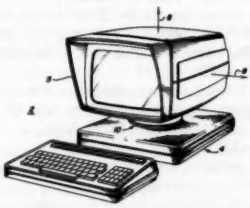
article clamping means on said body for attachment to said article and for securing said article against said body.

4,542,872

TERMINAL WITH TILT-SWIVEL DISPLAY

Jerry C. Marino, Sudbury, and David E. Desilets, Hopkinton, both of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Filed Feb. 9, 1983, Ser. No. 465,273
Int. Cl.⁴ F16M *11/12*
U.S. Cl. 248—183 **6 Claims**



1. A display terminal including a display portion, a base portion and a coupling mechanism for coupling said display to said base portion, permitting independent movement of the display portion about first and second mutually perpendicular reference axes, comprising:

A. a cylindrical neck member extending from said base portion along said first axis,

B. a swivel member including a circular aperture, said swivel

member being positioned with said circular aperture disposed about said neck member, said swivel member being pivotable about said first axis, and said swivel member including a first display support member having a convex cylindrical upper surface extending about a first central axis,

C. a second display support member affixed to said display portion and including a concave cylindrical lower surface extending about a second central axis, said lower surface having substantially the same radius as said upper surface, and

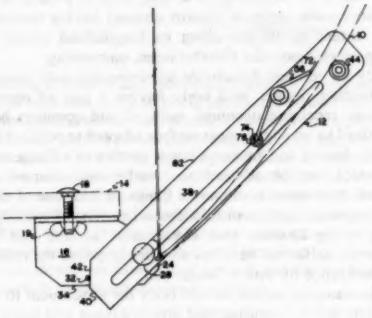
D. biasing means including a helical spring for biasing said first and second cylindrical surfaces toward each other, whereby said first and second central axes are substantially coaxial with said second reference axis.

4,542,873

BOW HOLDER

James F. Matherly, Rte. 2, and Benny S. Southard, Rte. 1, Box 177, both of Summerfield, N.C. 27358

Filed Jun. 1, 1983, Ser. No. 499,834
Int. Cl.⁴ E04G *5/06*
U.S. Cl. 248—218.4 **7 Claims**



1. A holder for retaining a hunting bow comprising; a bow-supporting stanchion, a fixed bow-retaining member projecting from said stanchion, resilient bow stabilizing means supported on said stanchion spaced from said bow-engaging member for urging and supporting a bow against said bow-retaining member, and a stanchion supporting bracket for releasably retaining said stanchion to a support structure.

4,542,874

BRACKET FOR A WORK PLATFORM

Tor Rönning, Aspövägen 51, S-125 40 Älvsjö, Sweden

PCT No. PCT/SE83/00053, § 371 Date Sep. 28, 1983, § 102(e) Date Sep. 28, 1983, PCT Pub. No. WO83/02977, PCT Pub. Date Sep. 1, 1983
PCT Filed Feb. 18, 1983, Ser. No. 552,132
Claims priority, application Sweden, Feb. 18, 1982, 8201018
Int. Cl.⁴ E06C *7/16*
U.S. Cl. 248—238 **3 Claims**

1. A work platform support bracket for mounting on a ladder, said bracket comprising:

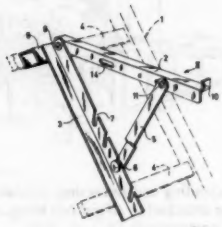
a carrying bar including means for suspension of said carrying bar from one rung of a ladder with said carrying bar extending downward in a plane of said ladder and engaging with at least one other rung lower than said one rung, said carrying bar including a longitudinal axis and a plurality of notches spaced along said axis;

an arm usable as a seat for a work platform, said arm having a longitudinal axis;

a first permanent pivot joint between said carrying bar and said arm, said first joint including means to permit relative pivoting between said carrying bar and said joint about an axis transverse to said carrying bar and arm longitudinal axes, said carrying bar and arm having mutually opposed faces shaped to permit pivoting at said first joint by a degree such that said carrying bar and arm longitudinal axes extend parallel to one another;

a strut having hook means at one end for engagement with selected ones of said notches;

a second joint between said arm and a second end of said strut such that said arm may be held horizontal and angularly spaced from said carrying bar by engagement of said strut with said carrying bar at said notches and with said arm at said second joint, said second joint comprising a releasable pivot joint including:



(a) at least two holes in said arm, said holes being spaced along said arm axis and each of said holes being elongated in the direction of said arm axis,

(b) a stud fixed to said second end of said strut, said stud being shaped and oriented to be insertable in said holes,

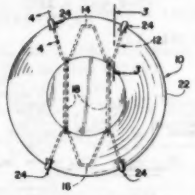
(c) a head fixed to said stud, said head being shaped and oriented such that said head can enter and exit from said holes only when said one end of said strut is angularly positioned relative to said arm such that said one end of said strut is not engageable with said carrying bar, whereby said strut is locked to said arm in use.

4,542,875

RIM PROTECTOR FOR HANGING PLATES

William A. DeBaun, and Linda M. DeBaun, both of 6011 Short St., Yorba Linda, Calif. 92686

Filed Jun. 27, 1983, Ser. No. 508,018
Int. Cl.⁴ A47G *1/16*
U.S. Cl. 248—491 **1 Claim**



1. A protective boot in combination with a dish or plate-mounting bracket, comprising:

a bracket including a first bracket section and a second bracket section, each section having claw members which are hooked over the peripheral edge of said dish or plate;

spring members connecting said bracket sections together, and clamping said brackets to said dish or plate;

a protective boot member adapted to be mounted over the respective claws to protect said edge of said dish or plate from direct engagement with said claw, said boot comprising:

a sleeve-like body member having an embossed, annular, peripheral flange member including a central bore having an open end and a closed end, said open end having a larger diameter than that of said closed end, whereby the

reduced-diameter portion of said bore fixedly engages said claw member, allowing said enlarged open end to move freely for engagement with said dish or plate;

said bore being tapered inwardly from said open end to said closed end;

wherein said body member is tapered downwardly and inwardly from said peripheral flange to said closed end, allowing said protective boot member to bend to conform to the configuration of said claw and said peripheral edge of said dish or plate.

4,542,876

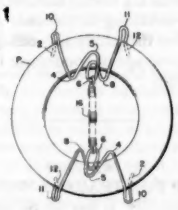
SINGLE SPRING ADJUSTABLE PLATE HANGER

James W. Hogg, Nashville, Tenn., assignor to Anchor Wire Corporation, Goodlettsville, Tenn.

Filed Dec. 7, 1983, Ser. No. 559,104

Int. Cl.⁴ A47G *1/16*

U.S. Cl. 248—491 **7 Claims**



1. A plate hanger for mounting a plate to a wall comprising in combination:

a first plate-gripping member having two spaced ends, each end of said first plate-gripping member being adapted to receive a first portion of a rim of a plate to be displayed;

said plate-gripping member having an intermediate loop portion connecting said ends;

a second plate-gripping member having two other ends, each said other end of said second plate-gripping member being adapted to receive a second portion of a rim of a plate to be displayed;

said second plate-gripping member having an intermediate loop portion connecting said other ends;

a means for tensioning having a predetermined unstretched length which is adapted to engage said intermediate loop portion of said first plate-gripping member and said intermediate loop portion of said second plate-gripping member; whereby said first and second plate-gripping members can be urged toward one another so as to retain a plate therebetween;

said intermediate loop portions of said plate-gripping members includes a wire bent at three locations so as to form an overlying oval-shaped loop portions and an underlying oval-shaped loop portion, said larger oval-shaped loop portion being adapted to engage a projection to support a plate upon a wall;

a first "V"-shaped portion connecting one of said two spaced ends of said plate-gripping members to a region of said wire adjacent said overlying oval-shaped loop portion;

a second "V"-shaped portion connecting the other one of said two spaced ends of said plate-gripping members to a region of said wire adjacent said underlying oval-shaped loop portion;

said means for tensioning including an elongated member having two free ends and which is elastically resilient; each of said two free ends having a means for attachment to a wire member.

4,542,877

SUPPORT SPRING BLOCKING STRUCTURE, AND SPRING-STRUCTURE COMBINATION

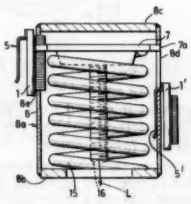
Friedrich Elsässer, Keltern, Fed. Rep. of Germany, assignor to Witzenmann GmbH Metallschlauch-Fabrik Pforzheim, Pforzheim, Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,095

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1983, 3315076

Int. Cl.⁴ F16M *1/00*

U.S. Cl. 248—561 **16 Claims**



1. Support spring blocking structure (**1, 10**) for, and in combination with, a spring support,

wherein the spring support comprises

means for defining an essentially tubular housing (**8, 8*a*, 8*b*, 8*c***);

a spring (**15**) located in the housing;

a spring plate (**7**) bearing against one end of the spring,

said means for defining the tubular housing having abutment means (**8*b***) for supporting the other end of the spring;

means (**16**) for coupling a load (L) to the spring plate which upon application of the load, tends to deflect the spring from a quiescent position to a deflected position;

the means for defining the tubular housing being formed with an opening (**8*e***) extending in the direction of deflection of the spring;

and wherein the support spring blocking structure (**1, 10**) comprises

a plurality of superposed holding plates (**2, 9**), stacked above each other, positionable in interfering relation with respect to the spring plate (**7**), and movable out of interfering relation with respect thereto;

and a plate holder structure (**1*a*, 10*a***) selectively separable from and attachable to said means for defining said essentially tubular housing (**8, 8*a*, 8*b*, 8*c***) and engageable in the opening (**8*e***) of the means defining the essentially tubular housing, said plate holder structure securing said holding plates (**2, 9**) in superposed, stacked relation; and wherein

said plate holding structure and said housing plates are dimensioned and located for non-rotatable sliding movment of said holding plates in said plate holding structure;

wherein the holding plates (**2, 9**) each define a holding plate surface;

essentially rectangular notches or recesses (**2*a*, 9*a***) are formed on two opposite regions of the holding plates,

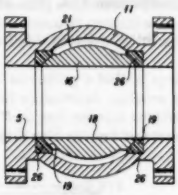
and wherein the plate holder structure comprises an elongated element extending over the length of the stacked holding plates, and having at least one engagement portion fitting against an edge surface of the plate and within, and engaging said notches or recesses (**2*a*, 9*a***) of the holding plates.

4,542,878

BALL VALVE

Robert P. Kulisek, Erie, Pa., assignor to Jarecki Industries, Fairview, Pa.

Filed Aug. 10, 1983, Ser. No. 521,951
Int. Cl.⁴ F16K *5/06*
U.S. Cl. 251—315 **1 Claim**



1. A ball valve comprising a valve body and a ball member,
said body having an inlet and an outlet with a flow passage between said inlet and said outlet and a ball receiving space in said flow passage between said inlet and said outlet in said flow passage,
sealing means on said body surrounding said flow passage at each side of said ball receiving space,
a ball member having a flow path therethrough,
said ball member having a first spherical surface on the outside thereof generally conforming to the surface of said receiving space,
said sealing means on said body comprising resilient rings each set in a groove in said body,
each said resilient ring having a generally spherical surface adapted to engage said spherical surface of said ball around the said inlet to the flow path and around the outlet to said flow path and to terminate substantially at said flow path when said ball is rotated to align said flow path with said flow passage and when said ball is rotated to a position generally at right angles to said flow path,
said ball having a relieved portion generally concentric to said first mentioned circle surface and having a smaller radius of curvature than said first mentioned circle surface on each side thereof spaced 90° from said inlet and outlet to said flow path,
said resilient rings each having a sealing surface engaging the spherical outside surface of said ball over the total area of said spherical surface on said ball that is adapted to be exposed to liquid in a line in which said valve is connected when said valve is in the open and closed positions,
said relieved portion, said resilient rings and said valve body cooperating to form an annular cavity surrounding said ball member and coaxial with said flow passage,
said sealing means on said body being adapted to engage and cover said spherical surface on said ball member around said relieved spaces and around said inlet and said outlet when said ball is rotated 90° from alignment to said flow passage whereby liquid in said flow passage through said valve does not engage said spherical surface or said ball member or said sealing means or when said valve is rotated either to the open or closed position.

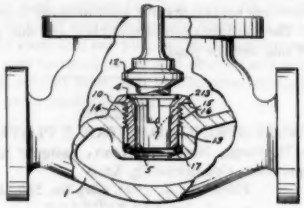
4,542,879

VALVE RING ARRANGEMENTS IN METALLIC VALVES, CONTROL VALVES, CONDENSATE REMOVAL DEVICES, AND OTHER MEANS FOR THE PREVENTION OF LEAKAGES DUE TO CORROSION

Marcel Stein, New York, N.Y., assignor to Marbor Engineering Associates, New York, N.Y.

Continuation-in-part of Ser. No. 325,361, Nov. 27, 1981, abandoned. This application Nov. 12, 1982, Ser. No. 441,096
Int. Cl.⁴ F16K *25/00*
U.S. Cl. 251—360 **18 Claims**

1. A shutoff valve for a steam distribution system wherein condensate accumulates as the system is shut down, said valve comprising a valve body with a valve ring boss, a valve ring having a valve ring collar inserted into the valve ring boss, the valve ring and the valve ring boss having interfacing sealing surfaces therebetween which are located above the level of any possible condensate accumulation inside the valve body,



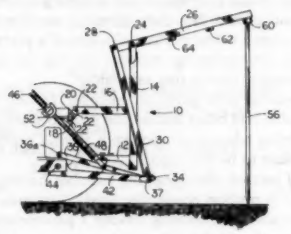
the valve ring and the valve ring boss having sloping surfaces all around the interfacing sealing surfaces which together form a monotonically declining continuous mantle, said mantle declining away from the interfacing sealing surfaces to thereby ensure complete drainage of condensate from the sealing surfaces and the mantle.

4,542,880

POST DRIVER FOR TRACTOR WITH POWER LIFT

Crawford A. Bishop, Rte. 1, Box 54, St. Amant, La. 70774

Filed Aug. 29, 1983, Ser. No. 526,956
Int. Cl.⁴ E21B *19/00*
U.S. Cl. 254—29 R **8 Claims**



1. An apparatus for driving a post into the ground operable in combination with a tractor having a chassis and a power lift mechanism with two lift arms, comprising:
a. at least two lever arm means pivotally connectable to the chassis of a tractor, said lever arm means being connectable to the lift arms of the power lift mechanism of a tractor,
b. rigid bar means connected to each end of said lever arms means,
c. pivot arm member means connected to said rigid bar means,
d. base member means rigidly connectable to the chassis of a tractor,
e. support member means rigidly connected to said base member means, said support member means having brace member means connected to said support member means and connectable to the chassis of a tractor, and a second brace member means being pivotally connected to said rigid bar means and pivotally connectable to the chassis of a tractor, and
f. drive member means pivotally connected to said support member means and said pivot arm member means.

4,542,881

CAR RAMP

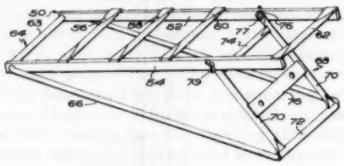
Dennis Naylor, Bradford, England, assignor to David Charles Smith, East Keswick, England

Filed Sep. 22, 1982, Ser. No. 421,676

Claims priority, application United Kingdom, Feb. 27, 1982, 8205872

Int. Cl.⁴ E02C *3/00*

U.S. Cl. 254—88 **3 Claims**



1. A vehicle wheel stand comprising:

(a) a flat upper frame; and

(b) means defining a flat strut frame and the upper frame and said means defining the strut frame being positionable between;

(i) a transport position in which the strut frame and upper frame inter fit and form a substantially flat assembly which takes up a minimum of space and

(ii) a second position in which, when said stand rests on the ground, the upper frame inclines upwardly from the front end on the ground to an upper rear end supported by the strut frame which extends between the rear end of the upper frame and the ground and meets the upper frame at an acute angle; and

the improvement comprising that the upper frame comprises a pair of spread side rails between which extend cross bar means so that a vehicle can run up the upper frame, and at the rear end the spacing between two of said cross bar means is sized to define a well into which the vehicle wheel can drop so that the rails overlap the wheel sides as to stably hold the vehicle wheel in supported condition on flat ground, and the said two cross bar means of the upper frame are disposed on opposite sides of the location where the strut frame engages the upper frame in the second position and there is a strut cross bar which is part of the strut frame, but is located under the plane of the upper frame, and in position to lend additional support to the vehicle wheel.

4,542,882

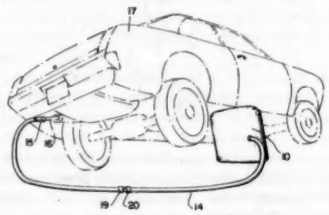
AIR JACK FOR USE WITH A VEHICLE EXHAUST SYSTEM

David Choe, 60 Bridge Town St., Staten Island, N.Y. 10314

Filed Apr. 19, 1984, Ser. No. 602,169

Int. Cl.⁴ B66F *3/24*

U.S. Cl. 254—93 HP **6 Claims**



1. An air jack comprising:

a hose member, containing a connecting means disposed at one end thereof,

an inflatable member provided with a support plate containing a plurality of spikes attached thereto, said inflatable member being provided with a socket connector, whereby the connecting means on said hose member can be secured to the socket connector by a simple twisting action,

adapter means disposed at the other end of the hose member for attaching said end of said hose member to the exhaust system of a vehicle, and

back valve means disposed in said hose member for preventing a back flow of gas from said inflatable member after said gas has been introduced into said inflatable member.

4,542,883

DEVICE FOR TENSIONING STRAPS

Edith Rutzki, Wilhelmstrasse 23, D-6901 Dossenheim-Heidelberg, Fed. Rep. of Germany

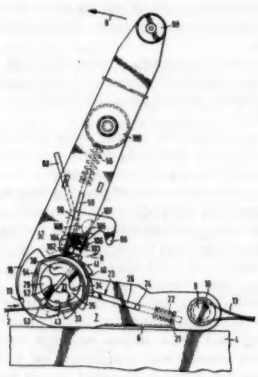
PCT No. PCT/DE83/00018, § 371 Date Oct. 3, 1983, § 102(e) Date Oct. 3, 1983, PCT Pub. No. WO83/02754, PCT Pub. Date Aug. 18, 1983

PCT Filed Feb. 4, 1983, Ser. No. 548,883

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1982, 3203750

Int. Cl.⁴ B21F *9/00*; B25B *25/00*; B66D *1/14*

U.S. Cl. 254—217 **15 Claims**



1. A strap tensioner, particularly for stowing loads, comprising: a strap (**2**), anchoring means for a fixed end (**13**) of said strap (**2**), a strap drum (**28**), a ratchet mechanism comprising ratchet wheels (**38, 39**) placed at each side of said strap drum (**28**), a drive pawl (**58**) and a stop pawl (**23**) cooperating with said ratchet wheels (**38, 39**), spring means for urging said drive pawl and said stop pawl in the direction of said ratchet wheels, a ratchet lever (**42**) which is pivoted about the axis of said strap drum, wherein said drive pawl is movably mounted on said ratchet lever characterized in that said ratchet lever (**42**) is divided into inner and outer parts (**47***a*, **47***b*, **48***a*, **48***b*) said parts being linked together by an axle (**73**), wherein each part is connected to a pair of tooth means (**79, 80**) which are pivotally mounted on said axle, and wherein at least one of said tooth means (**79, 80**) is axially movable with respect to the other tooth means, said pair of tooth means being tensioned against each other by means of an actuating spring (**86**), and wherein said strap drum (**28**) is actuated by said ratchet mechanism in said tensioning direction and is prevented from being overloaded by the pivotal movement of said inner and outer parts about said axle.

4,542,884

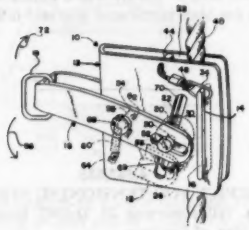
REMOVABLE DOUBLE ACTION ROPE GRIP

Cleveland E. Dodge, Jr., R.D. 1-7, Pownal, Vt. 05261

Continuation-in-part of Ser. No. 501,623, Jun. 6, 1983,. This application May 3, 1984, Ser. No. 605,074

Int. Cl.[4] A47L *3/04*; A62B *1/16*; B65H *59/16*

U.S. Cl. 254—391 **6 Claims**



1. A rope grip, comprising:

(a) shell means defining a pair of rope guiding surfaces in facing spaced relationship to each other;

(b) plate means having upper and lower extremities disposed between said two rope guiding surfaces and secured to said surfaces, said first and second surfaces and said plate means defining a generally U-shaped channel wherein said plate means is removable and comprises a plate which is mounted in a pair of mating mounting means in said shell means and retainer means for keeping said plate in position;

(c) channel restricting means disposed in said channel in facing spaced relationship to said plate means;

(d) mounting means associated with said channel restricting means;

(e) track means for mating with said mounting means and guiding said mounting means and said channel restricting means along a path between a first point proximate to said upper extremity of said plate means, said first point being disposed at a first distance from said upper extremity, and a second point proximate said lower extremity of said plate means, said second point being disposed at a second distance from said lower extremity, said second distance being greater than said first distance;

(f) arm means coupled to said mounting means for moving said mounting means and said channel restricting means along said track means between said first and second points wherein said arm means has a slot therein and said mounting means is mounted in said slot;

(g) rotational mounting means fixedly secured with respect to said shell means for rotatably supporting said arm means at a third point removed from said path; and

(h) spring means for urging said arm in a direction where said arm in turn urges said mounting means and said channel restricting means toward said upper extremity.

4,542,885

METAL FENCE POST

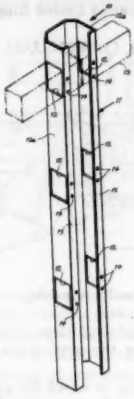
Thomas E. Rossiter, 2918 Rolling Hills, Carrollton, Tex. 75007

Filed Nov. 21, 1984, Ser. No. 673,990

Int. Cl.[4] E04H *17/14*

U.S. Cl. 256—69 **1 Claim**

1. A fence post, comprising, in combination, an upright channel, and rectangular rails supported in said channel; said channel being made of extruded metal, configurated around a central opening and being of generally "U"-shaped cross-sectional configuration by including a pair of opposite side walls and an interconnecting end wall between one side end thereof, and a pair of flanges formed between opposite side ends thereof; a plurality of equally spaced apart rectangular openings through each said side wall, said rectangular openings in one said side wall being aligned with said rectangular openings of the other said side wall; each said rectangular opening receiving one said rail therethrough, ends of said rails in aligned



pairs of said openings being abutted together, and a plurality of pairs of mounting openings along each said flange receiving screw fasteners screwed into a side of said rails.

4,542,886

PROCESS FOR PREPARING COLD DRAWN FILM FROM AN ETHYLENE-α-OLEFIN COPOLYMER AND AT LEAST ONE OF LOW-DENSITY POLYETHYLENE OR ETHYLENE COPOLYMERS AND POLYPROPYLENE, HIGH DENSITY POLYETHYLENE OR CRYSTALLINE POLYBUTADIENE

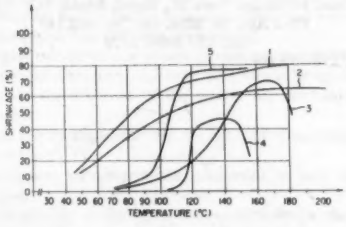
Isao Yoshimura, Fujisawa; Hideo Hata, and Takashi Kaneko, both of Yokohama, all of Japan, assignors to Y. Toyoda International Patent Office, Tokyo, Japan

Division of Ser. No. 949,253, Oct. 6, 1978, Pat. No. 4,277,578. This application Dec. 5, 1980, Ser. No. 213,319

Claims priority, application Japan, Oct. 11, 1977, 52-120917; Nov. 22, 1977, 52-139431; May 30, 1978, 53-63870; May 30, 1978, 53-63872

Int. Cl.[4] B29D *7/24*

U.S. Cl. 264—22 **21 Claims**



1. A process for the manufacture of a cold drawn film, which comprises mixing one of the specific combination of components, namely the combinations of (A)+(B), and (A)+(B)+(C): wherein

(A) is at least one selected from the group consisting of low-density polyethylene and copolymers of ethylene with vinyl ester monomers, unsaturated aliphatic monocarboxylic acids and alkyl esters of said monocarboxylic acids which are all compolymerizable with ethylene

(B) is an elastomer having a density of not more than 0.91 g/cm^3 and made of an ethylene-β-olefin copolymer, and

(C) is at least one selected from the group consisting of crystalline polypropylene, high-density polyethylene and crystalline polybutene-1, extruding the resultant blend through an annular die to produce a tubular sheet, suddenly solidifying the tubular sheet by means of a liquid refrigerant, passing the tubular sheet through two pairs of nip rollers and heating the sheet to a temperature of not exceeding 110° C., and also not exceeding the melting point of the main crystalline polymer and then stretching the film at a stretching temperature in the range of from 30° to 80° C. while introducing air into the tubular sheet interior under pressure for thereby effecting cold orientation of the sheet into a film at an area stretching ratio in the range of from 5 to 30 times the original dimension to produce film having a haze not exceeding 4.0% and having a tensile strength at rupture of at least 5 kg/mm^2.

4,542,887

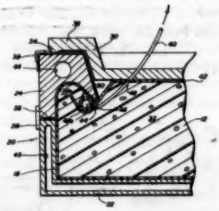
PROCESS FOR MOLDING CUSHION ARTICLES

George L. Bethell, Rock Island, Ill.; Donald F. Burch, Coralville, and Lysle R. Hinkhouse, Wilton, both of Iowa, assignors to Sears Manufacturing Company, Davenport, Iowa

Division of Ser. No. 418,395, Sep. 15, 1982,. This application Feb. 23, 1984, Ser. No. 583,096

Int. Cl.^{4} B29D *27/04*; A47C *27/14, 31/02*

U.S. Cl. 264—46.4 **17 Claims**



1. A process for molding a seat cushion or the like which can be secured in place onto a seat support without additional attaching means, comprising the steps of:

providing a mold having the shape of a desired seat cushion with a peripheral portion complementary to the periphery of the seat support and being adapted to position securing means in the mold;

locating securing means in said mold in the area of the peripheral portion of the seat cushion, the securing means having means for venting air entrapped within the mold, the securing means providing means to secure the seat cushion over the seat support;

pouring foam into said mold and curing the foam to form the seat cushion, the foam adhering to the securing means to hold the securing means in proper located position as an integral part of the seat cushion on removal of the cured seat cushion from the mold; and

evacuating the entrapped air during a molding operation through conduit means between said securing means and the exterior of the mold.

4,542,888

ADDING TO SILICA REFRACTORY STRUCTURES

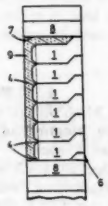
Pierre Robyn, Nivelles, and Pierre Deschepper, Charleroi, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Feb. 16, 1984, Ser. No. 580,718

Claims priority, application United Kingdom, Feb. 18, 1983, 8304619

Int. Cl.^{4} F27D *1/16*

U.S. Cl. 266—44 **8 Claims**



1. A method of adding to a silica refractory structure while the structure is maintained at a temperature in excess of 600° C., comprising:

providing a mixture of particles of exothermically oxidisable material and particles of silica incombustible refractory material;

placing a vitreous silica brick, which has a temperature below that required to transform the silica brick from the vitreous to the crystalline state, into a desired position relative to the structure; and

bonding the vitreous silica brick to the structure by projecting the mixture toward the position of the brick and burning the mixture during its projection to form a coherent refractory mass which effects such bonding.

4,542,889

INSTALLATION FOR THE DIRECT PRODUCTION OF SPONGE IRON PARTICLES AND LIQUID CRUDE IRON FROM IRON ORE IN LUMP FORM

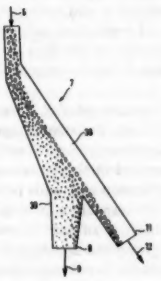
Bogdan Vuletic, Düsseldorf, Fed. Rep. of Germany, assignor to Korf Engineering GmbH, Linz, Austria

Division of Ser. No. 551,174, Nov. 14, 1983,. This application Aug. 9, 1984, Ser. No. 639,149

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1982, 3242232; Aug. 5, 1983, 3328373

Int. Cl.^{4} C21B *13/14*

U.S. Cl. 266—137 **12 Claims**



1. Apparatus for production of sponge iron particles and liquid crude iron in lump form comprising a direct reduction means which is

arranged above a melting gasifier means and which at its

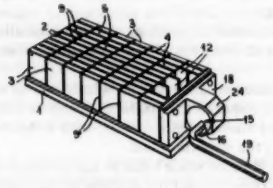
lower end has a discharge means for hot sponge iron, the outlet opening of said discharge means communicating with the melting gasifier means by way of at least one connecting conduit, a coarse grain separator means incorporated in the connecting conduit between the direct reduction means and the melting gasifier means, said separator means being provided with a separator outlet opening for a fine grain fraction communicating with the melting gasifier means and another opening for a coarse grain fraction communicating with a separate means.

4,542,890

MAGNETIC CHUCK

Philibert M. Braillon, Montmelian, France, assignor to Braillon & Cie, Montmelian, France

Filed Dec. 28, 1983, Ser. No. 566,329
Claims priority, application France, Dec. 28, 1982, 82 22198
Int. Cl.⁴ B25B *11/00*
U.S. Cl. 269—8 **14 Claims**



1. A magnetic chuck comprising:

a magnetically permeable base plate;

an orthogonal matrix of flat magnetically permeable and substantially identical pole pieces with mutually parallel major faces arrayed above said base plate in rows parallel to said major faces and in columns transverse thereto, the pole pieces of the two outermost rows of said matrix being in contact with said base plate, the remaining pole pieces included in intermediate rows being separated from said base plate by magnetically nonpermeable spacing means, neighboring rows being separated from one another by channels bounded by coplanar faces of said pole pieces, the latter having upper edges in a plane parallel to said base plate;

a plurality of groups of flat permanent first magnets fixedly spaced apart in every other of said channels with transverse magnetization and with pole faces confronting the major faces of respective pole pieces of each adjoining row, the polarities of said first magnets alternating within each group but being the same within each, column of said matrix;

a plurality of groups of flat permanent second magnets spaced apart with the same magnetic pitch as said first magnets, respective groups of said second magnets being movably disposed in the remaining channels with transverse magnetization and with pole faces confronting the major faces of respective pole pieces of each adjoining row, the polarities of said second magnets alternating within each group and equaling those of said first magnets aligned therewith in corresponding columns in one position of said second magnets while being opposite the polarities of said first magnets aligned therewith in corresponding columns in another position of said second magnets; and

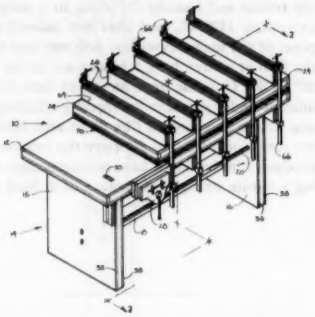
actuating means coupled with said second magnets for joint displacement into either of said positions.

4,542,891

COMBINATION WORKBENCH, VENEER PRESS AND CASE GOODS ASSEMBLY PRESS

Ian J. Kirby, 55 Betty Dr., Cumming, Ga. 30130

Filed Dec. 28, 1983, Ser. No. 566,392
Int. Cl.⁴ B23Q *3/00*
U.S. Cl. 269—16 **7 Claims**



1. A veneered panel and case goods assembly gluing press comprising:

(a) at least two press cauls of torsion box structure constructed of outer torsion box skins of high density fiberboard, inner torsion box skins of medium density fiberboard and ribs and torsion box ends of medium density fiberboard; and

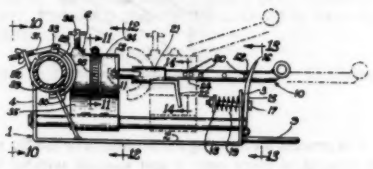
(b) a plurality of pairs of battens having longitudinally curved contact surfaces for pressing the cauls together between members of each pair by exerting opposing pressure on the pairs of battens.

4,542,892

POLY-PIPE FUSION MACHINE

Erwin P. Goldner, 2727 Felton St., San Diego, Calif. 92104

Filed Feb. 24, 1984, Ser. No. 583,436
Int. Cl.⁴ B25B *1/20*
U.S. Cl. 269—41 **2 Claims**



1. A machine for fusing a saddle-type, branch or T-junction fitting to a pipe, comprising:

a first clamp for holding said pipe;

a second clamp for holding said fitting;

means for maintaining said second clamp oriented so that said fitting is axially orthogonal to the axis of said pipe and so that a bonding surface of said fitting is parallel to a surface to be mated on said pipe;

a manually-operable plunger for moving said second clamp between a first position where said fitting is mated with said pipe and a second position where said fitting is separated from said pipe;

said first position being selectable from a plurality of predetermined positions in order to accomodate a plurality of pipe or fitting sizes;

said plunger being pivotally mounted to said second clamp at one end so as to arcuately move between a

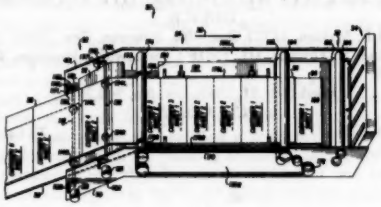
locked first position where a loading force is applied and a released position where
said loading force is not applied;
said plunger further having a plurality of pin stops spaced along its length at positions corresponding to said predetermined positions;
a resiliently-loaded plate having a notch, the sides of which engage one of said plurality of pin stops when said plunger is moved to said locked first position;
said loaded plate being arranged to bear against a respective one of said pin stops in each of said predetermined positions;
said plate applying a force on said second clamp in a direction orthogonal to the pipe to the axis of said pipe during a fusion operation.

4,542,893

OVERLAPPING DOCUMENT STRIP CONVEYING METHOD AND APPARATUS

Marvin B. Clause, Jr., and Callie R. Thompson, both of Bethlehem, Pa., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 14, 1984, Ser. No. 671,357
Int. Cl.⁴ B65H *45/00, 23/00, 25/02*
U.S. Cl. 270—52.5 **30 Claims**



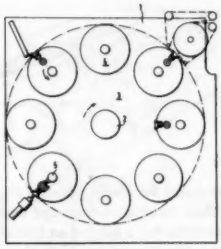
1. Apparatus for conveying at least two superposed strips of documents in a direction of conveyance toward a downstream workstation, each of said strips comprising a plurality of documents, each of said documents having a portion thereof which will be a leading edge upon eventual separation of said document from its strip, said strips being conveyed over one another in a direction of superposition whereby the leading edges of documents of one strip alternate in sequence in the direction of conveyance with the leading edge of documents in another strip, said apparatus comprising:
conveying means for imparting motion to said strips in said direction of conveyance;
separating means for separating in alternating strip fashion leading ones of said document from their respective strips;
means for determining whether the leading edges of documents in one of said strips are in an acceptable positional relationship in said direction of conveyance with said leading edges of documents in the other of said strips, said determining means further comprising:
means for determining when leading ones of said documents have been separated from their respective strips and for generating a separation signal indicative thereof;
means for generating timing pulses;
first counter means;
second counter means;
counter select means for selectively enabling counting of said timing pulses by said first counter and said second counter, said counters being enabled in alternating fashion after documents are separated in alternating strip fashion from their strips, said counters being enabled to count the number of pulses generated from a point in time after a preceding document has been separated from a first of said strips until a document has been separated from a second of said strips; and,
means for comparing the count in one of said counters (indicative of the number of timing pulses generated with respect to the conveyance of a just-separated from said second strip document) with the count in the other of said counters (indicative of the number of timing pulses generated with respect to the conveyance of the document previously separated from said first strip) and for generating a comparison signal indicative thereof;
braking means capable of at least temporarily retarding the motion of at least one of said strips; and,
control means responsive to said determining means for controlling said braking means whereby the motion of at least one of said strips is retarded for urging the leading edges of documents in one of said strips into said acceptable positional relationship in said direction of conveyance with the leading edges of documents in the other of said strips.

4,542,894

ROTARY APPLICATOR HAVING SUCTION ROLLERS WITH SUCKERS WHICH CAN BE SWITCHED OFF

Richard Feldkämper; Siegfried Maneke, both of Lengerich, and Bernhard Philipp, Ibbenbüren, all of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 470,962
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208425
Int. Cl.⁴ B65H *5/08, 3/12*
U.S. Cl. 271—11 **9 Claims**



1. A rotary applicator for carrying articles along a circular arc, said applicator comprising:
(a) A rotatable frame;
(b) a plurality of suction supports rotatably carried in said frame, said suction supports having their axes in substantially parallel relationship and spaced from each other along a circle concentric with the axis of rotation of said frame;
(c) a plurality of aligned suction grippers carried by said suction supports, said suction grippers each including a gripping head for engagement with an article to be carried, each gripping head having a suction aperture that opens outwardly toward the article to be carried;
(d) means for providing communication between said suction apertures and a suction air conduit, said communication means including a tubular supporting member carried by each of said suction supports and having first apertures, said suction grippers mounted on carrier members rotatably carried on said supporting members and having second apertures that communicate with said suction apertures, said carrier members being pivotable relative to said supporting members to selectively bring said first and second apertures into and out of alignment with each other; and
(e) means for selectively shifting said suction grippers from an operative position in which the respective gripping heads extend beyond the surface of an enveloping cylinder that envelopes said suction supports in order to contact an article to be carried, to an inoperative position in which

the respective gripping heads are within the enveloping cylinder in order to preclude contact with an article to be carried, said first apertures being in alignment with corresponding second apertures when said suction grippers are in the operative position to provide communication between said suction apertures and a suction air conduit, and said first apertures being out of alignment with corresponding second apertures when said suction grippers are in the inoperative position to prevent communication between said suction apertures and a suction air conduit.

4,542,895

SEPARATOR PLATES FOR ROTATING FEED SEGMENTS OF A SHEET FEEDER

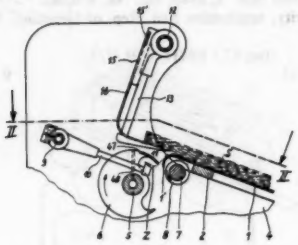
Martin Blumle, Gullesheim, Fed. Rep. of Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Dec. 27, 1983, Ser. No. 565,461

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1983, 3300295

Int. Cl.⁴ B65H *3/08*

U.S. Cl. 271—101 **2 Claims**



1. In an apparatus for feeding blanks from beneath a pile of blanks, each blank having a front edge with an angled cut-out, said apparatus including a tongue and pivoting vacuum device which separates the front edge of the bottom blank from the pile, an extractor roller, and rotating feed segments the engagement edge of which cooperate with the extractor roller to receive the fed blanks, the improvement comprising separator plates mounted on the rotating feed segments which align the blank in the direction of conveyance and feed the same to the extractor roller and the engagement edge of the feed segments, the front edges of the separator plates each having an outward bevel in the outer zone, said bevel having a bevel angle greater than the angle of the angled cut-out of the front edge of the blank being fed.

4,542,896

SHEET CONVEYING DEVICE

Yuji Takahashi, Nakamachi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1982, Ser. No. 395,745

Claims priority, application Japan, Jul. 13, 1981, 56-109086

Int. Cl.⁴ B65H *7/08*

U.S. Cl. 271—111 **8 Claims**

1. A sheet conveying device which comprises:

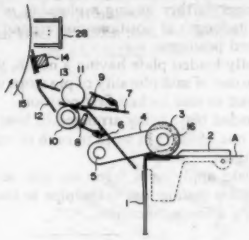
(a) sheet storage means for storing a plurality of sheets;

(b) a sheet conveying path;

(c) means for forwarding a sheet from said sheet storage means onto said conveying path;

(d) recording means for recording information on the sheet conveyed on said conveying path; and

(e) control means which determines whether said sheet forwarding means was in a sheet forwarding state, or not, when sheet conveyance is stopped, and which drives said sheet forwarding means in advance of resuming the information recording by said recording means, when said



control means determines that said sheet forwarding means was in the sheet forwarding state.

4,542,897

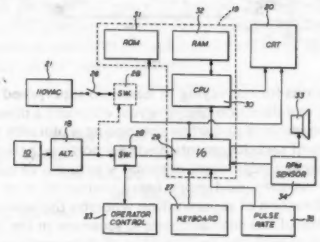
EXERCISE CYCLE WITH INTERACTIVE AMUSEMENT DEVICE

Donald L. Melton, 14722 Oak Pine, Houston, Tex. 77040, and William L. Thomas, III, 10815 Cypresswood, Houston, Tex. 77070

Filed Oct. 11, 1983, Ser. No. 540,290

Int. Cl.⁴ A63B *21/00*

U.S. Cl. 272—73 **20 Claims**



1. The combination of stationary-mounted, pedal-operated exercise apparatus with a computer operated video display apparatus which provides operator interaction with a computer during an exercise program, comprising;

a pedal operated exercise apparatus mounted in a fixed position on a stationary surface for use in exercising by an operator by pedaling in a fixed position,

an electric generator operated by said pedal operated apparatus,

switch means connected to said generator and activated upon a predetermined output from said generator corresponding to a predetermined energy expenditure level by the operator of said exercise apparatus,

a computer having a power source independent from said generator,

a video display interfaced with said computer and having a power source independent from said generator,

means on said exercise apparatus controlled and operated by the operator for interactively playing a game on said computer, and

said switch means being operatively distinct from said operator-controlled means and connected in circuit between said computer and said operator-controlled means and permitting game playing on said computer only when said switch means is activated by said generator.

4,542,898

COMBINATION MANUALLY AND INERTIA PROPELLED SKI-MOTION EXERCISE MACHINE

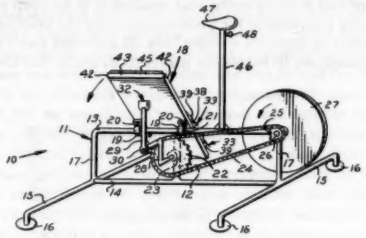
Harold Grushkin, 25 Atlantic Ave., Nanuet, N.Y. 10954

Filed Oct. 5, 1981, Ser. No. 308,839

The portion of the term of this patent subsequent to Sep. 24, 2000, has been disclaimed.

Int. Cl.⁴ A63B *69/18*

U.S. Cl. 272—97 **8 Claims**



1. A combination manually and enertia propelled ski-motion excercise machine, comprising, in combination, a rectangular frame, a pair of legs secured to said frame, providing lateral stabilizing and support means for said frame, a seat and post secured to said frame, for the user to sit upon, a pivotal board secured to said frame, with footrest members for the users feet to operate said machine, a pair of sprockets with chain means secured to said frame, for rotating a flywheel, which stores energy for continuing the pivoting motion of said board after said machine is operated several revolutions of said pair of sprockets, said flywheel, and crank means, that are secured to said frame.

4,542,899

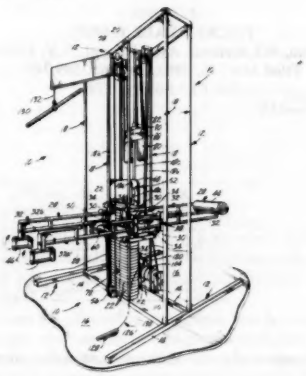
EXERCISE DEVICE

Byron J. Hendricks, 10038 Giovane Rd., El Monte, Calif. 91733

Filed Jan. 26, 1984, Ser. No. 574,274

Int. Cl.⁴ A63B *21/06*

U.S. Cl. 272—118 **35 Claims**



5. An exercise device comprising:

(a) a frame;

(b) a plurality of weights stacked one above the other on the frame;

(c) a lift assembly slidably mounted on the frame for vertical up and down movement along the height of the frame, the lift assembly comprising:

(i) a cage open at the top and bottom having a sufficient horizontal cross section so that the cage can be moved up and down around the outside of the stack of weights;

(ii) a first elongated lifting arm extending horizontally along one side of the cage mounted to the cage for horizontal sliding movement along the side of and vertical movement with the cage; and

(iii) a second elongated lifting arm extending horizontally along the opposite side of the cage mounted to the cage for horizontal sliding movement along the side of and vertical movement with the cage;

(d) means on the frame coupling a selected number of the weights to the lift assembly to thereby provide a resistance force to vertical upward movement of the lift assembly and against horizontal movement of said elongated lifting arms; and

(e) means on the frame for providing a force opposite to the resistance force when the first and second elongated arms are moved horizontally in the same direction along the sides of the cage.

4,542,900

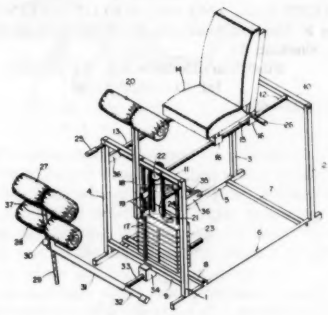
EXERCISE OR THERAPY DEVICE OR APPARATUS

David B. Ray, Huntsville, Ala., assignor to Versatile Equipment Co., Inc., Oxford, Ala.

Filed Oct. 4, 1983, Ser. No. 538,790

Int. Cl.⁴ A63B *21/02*

U.S. Cl. 272—134 **20 Claims**



1. Exercise apparatus comprising fixed means for bearing against the anterior part of the lower leg or ankle or foot of a user, movable means for bearing against the posterior part of the leg in the area of the knee joint of a user and movable relative to said fixed means, means positioning said fixed means and said movable means such that a seated user sitting adjacent said movable means on the side thereof relatively away from said fixed means can pass a leg over said movable means and beneath said fixed means, and means yieldably biasing said movable means toward a normal position in which a user with a lower leg portion bearing against said fixed means will have his knee flexed about said movable means, such that extending of the knee and straightening of the leg necessitates moving said movable means from said normal position against the force of said yieldable biasing means.

4,542,901

SAFETY BASE

Francis N. Fatool, and James L. Gordon, both of Sunbury, Pa., assignors to J. D. & C., Inc., Sunbury, Pa.

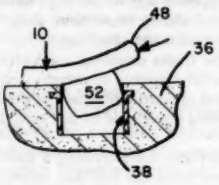
Filed Dec. 6, 1982, Ser. No. 446,956

Int. Cl.⁴ A63B *71/00*

U.S. Cl. 273—25 **14 Claims**

1. For use in playing the game of baseball and the like, the combination of a safety base having a cushion with a top surface, sides and a bottom surface and a root joined to and ex-

tending outwardly from the center of the cushion bottom surface, the cushion and root being formed from a resilient energy absorbant material to define a body; and a ground support adapted to be buried in a playing field and having an interior opening for receiving the base root when the base bottom surface is positioned on the playing field, a loose fit



clearance between the root and the ground support opening in at least one direction along the playing field whereby a player sliding into the cushion in a direction perpendicular to such one direction compresses the body against the ground support, expands the root into the loose fit clearance, buckles the cushion and pops the root out of the ground support without binding.

4,542,902

SOCCER BALL AND METHOD OF MAKING SAME

Chester F. Massino, Sandwich, Ill., assignor to Ideas That Sell, Inc., Sheridan, Ill.

Filed Mar. 15, 1984, Ser. No. 589,759
Int. Cl.[4] A63B *41/08*
U.S. Cl. 273—65 A **19 Claims**

1. A soccer ball comprising:
(a) a generally spherical center portion or core;
(b) yarn wrapped around said center portion so as to at least partially cover said center portion;
(c) tape at least partially covering said yarn; and
(d) a synthetic cloth cover having imprinted or affixed thereon a pattern simulating that on a conventional soccer ball; said ball having the general appearance, weight, size and shape of the conventional regulation soccer ball it is meant to replace but being softer and having a significantly lower coefficient of elastic restitution.

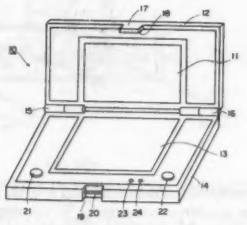
4,542,903

HAND-HELD GAME APPARATUS

Gunpei Yokoi, Kyoto, and Satoru Okada, Osaka, both of Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

Filed Dec. 22, 1982, Ser. No. 452,212
Claims priority, application Japan, Dec. 28, 1981, 56-214177
Int. Cl.[4] A63F *9/00*
U.S. Cl. 273—85 G **7 Claims**

1. A hand-held game apparatus, for playing games each having a plurality of different game aspects, comprising, a plurality of display panels each including controllable display characters for displaying on each panel a different game aspect of the same game, an extendable and foldable housing of a hand-held size including a plurality of housing portions rotatably coupled to each other for closing and opening said housing portions, whereby the closed housing is also of said hand-held size, each housing portion supporting one of said plurality of display panels, each of said plurality of display panels being disposed on its respective housing portion so that the display surfaces of said plurality of display panels may appear on one face of said housing when said housing is in an open position, whereby it is possible for a player observing the unfolded game apparatus to see with a single look all unfolded panel sections simultaneously to enable the player to ascertain that the different panel sections display said different game aspects of said same game, game operation means provided on at least one of said plurality of housing portions for manual operation by a player for playing said same game, and control means provided on at least one of said plurality of housing portions and responsive to a manual operation of said game operation means for controlling the display of said display characters of said plurality of different aspects of said same game for playing said same game on said plurality of display panels in a coordinated manner, whereby the manner of display of said different game aspects on said plurality of display panels is controlled by said control means so that each of said plurality of display panels cooperates with any other of said display panels to enable coordinating the playing of said same game.

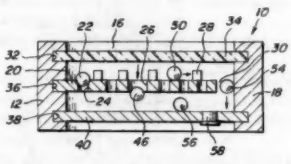


4,542,904

POCKET BALL GAME

Frank Parlato, 487 Kirkman Ave., Elmont, N.Y. 11003

Filed Mar. 15, 1984, Ser. No. 589,749
Int. Cl.[4] A63B *67/14*
U.S. Cl. 273—116 **5 Claims**



1. Ball in pocket, a game of chance and skill, comprising in combination:
(a) a frame containing a left hand member, a right hand member, a top member and a bottom member;
(b) at least one ball;
(c) a window, mounted on said frame, such that objects below said window may be clearly seen;
(d) a playing board, lying in a plane parallel to and beneath said window, whereby a ball game may be played upon said playing board and viewed through the window;
(e) a bottom board, lying in a plane parallel to and beneath

said playing board whereby any of said balls exiting said playing board come to rest upon said bottom board;

(f) means for adding and removing said balls from said game; and,

(g) means for easily restoring said balls to an original starting position, said left hand member, said right hand member and said top member of said frame each having three parallel channels such that said frame forms three sets of contiguous channels each defining three separate parallel planes wherein sets of contiguous said channels firmly and fixedly mount said window, said playing board and said bottom board, on said three separate parallel planes in said frame and wherein said bottom member of said frame has only two channels which are contiguous with said channels for mounting said window and said bottom board, said playing board being shorter than said window and said bottom board, whereby its edge is spaced from said bottom member so as to define therewith a channel along the entire length of said bottom member, said channel serving as said means for easily restoring said balls to an original starting position, whereby at any time any of said balls which have come to rest on said bottom board may be returned to an initial starting position on said playing board by turning said game upside down.

4,542,905

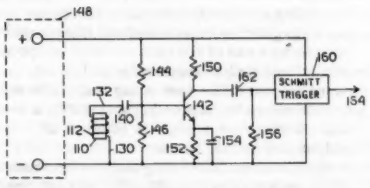
GAME WITH AN ELECTROMAGNETIC BALL DETECTOR

Donald E. Hooker, Glen Ellyn, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Sep. 27, 1982, Ser. No. 424,618

Int. Cl.[4] A63B *71/00*

U.S. Cl. 273—121 A **13 Claims**



1. A sensor for a game having a playfield surface with a preselected point and means for projecting a ferromagnetic projectile into motion on said playfield surface, said sensor comprising:

flux means for generating a magnetic flux having maximum strength substantially at said preselected point, and

means for responding to a time rate of change of said magnetic flux caused by passage of the projectile through said flux by generation of an electrical signal proportional to the time rate of change in said magnetic flux and to projectile speed of passage, said means for responding and said flux means being positioned with respect to said surface to avoid contact with said ferromagnetic projectile;

said electrical signal outputted to a circuit, wherein the projectile must be travelling at a minimum projectile speed in order to generate an electrical signal for counting.

4,542,906

COMPUTER AIDED GOLF TRAINING DEVICE

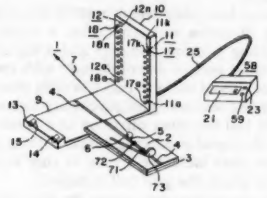
Akio Takase, Ota; Kohji Ogawa, Ojima; Takao Tsutsumi, Nitta; Yoshinori Yasuda, and Hiroaki Taguchi, both of Ota, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

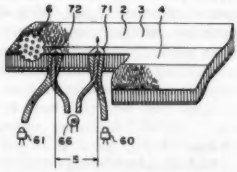
Filed Aug. 29, 1983, Ser. No. 527,473

Claims priority, application Japan, Sep. 2, 1982, 57-153277; Sep. 7, 1982, 57-155473; Sep. 8, 1982, 57-156326; Feb. 2, 1983, 58-15797

Int. Cl.[4] A63B *57/00, 69/36*

U.S. Cl. 273—185 R **7 Claims**





1. A golf training device for detecting movement of a golf ball impacted to display data on the ball which comprises:

a supporting body which extends toward a golf ball traveling direction and which has a signal producing means holding part on one side and a signal detecting means holding part on the other side with respect to the reference axis of the golf ball traveling direction,

first and second light signal producing means placed along the golf ball traveling direction at a predetermined distance on the signal producing means holding part of said supporting body to emit, including means to emit light signals where the phase of the first light signal is different from the phase of the second light signal in at least an area where the golf bass is passed,

a first light signal detecting means for detecting the first light signal from at least said first light signal producing means including means to output a detection signal and a second light signal detecting means for discriminately detecting each of the signals from said first and second light signal producing means including means to output a detection signal, both of the light signal detecting means being arranged along the golf ball traveling direction at a predetermined distance on the light signal detecting means holding part of said supporting body and wherein the discrimination between said first and second signals is at least partially accomplished by the phase difference between said first and second light signals,

an operation-processing means which receives output signals from said first and second light signal detecting means and processes data on said golf ball based on said received signals, and

a display means for displaying the result of the processing in said operation-processing means.

4. A golf training device for detecting movement of a golf ball impacted to display data on the ball which comprises:

a first base plate for a golf ball,

a club head moving speed detecting means comprising:

at least two elements which are placed in a predetermined distance in the golf ball traveling direction each having:

a coaxial optical fiber where one end is exposed on the surface of said first base plate;

a light emitting element placed at the opposite end from that exposed on said base plate, wherein said light emitting element is placed on the inner axis of said optical fiber; and

a photosensitive element placed at the opposite end from that exposed, wherein said light emitting element is placed on said base plate on the outer axis of said optical fibers provided in said first base plate, which detects the moving speed of said club head, and means to output a detection signal,

a second base plate which extends toward a golf ball traveling direction and which has a signal detecting means holding part on one side and a signal detecting means holding part on the other side with respect to the reference axis of the golf ball traveling direction,

a first and second signal producing means placed along the golf ball traveling direction at a predetermined distance on the signal producing means holding part of said second base plate including means to emit signals to at least an area where the golf ball is passed,

a first signal detecting means for detecting a signal from at least said first signal producing means further including means to output a detection signal and a second signal detecting means for detecting the signals from said first and second signal producing means, further including means to output a detection signal, both of the signal detecting means being arranged along the golf ball traveling direction at a predetermined distance on the signal detecting means holding part of said second base plate,

an operation-processing means constructed in such a manner that an output signal from said club head moving speed detecting means is received including means to process the data on club head moving speed; an output signal from said first and second signal detecting means is received to perform processing of the data on the ball including speed of the ball; the data on the moving speed of said club head moving speed detecting means is compared with the data on the speed of the ball obtained based on the output signal from said first and second signal detecting means; and the data on the speed and other data of the ball are output to be displayed when the speed of the club head is smaller than the speed of the ball, otherwise indication of error is output without displaying the data on speed of the ball, and

a display means for displaying the result of the processing in said operation-processing means.

4,542,907

CORRUGATED EXPANDER FOR PISTON RING ASSEMBLY

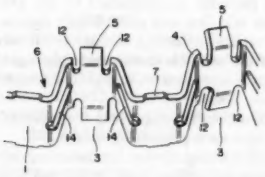
Ko Chiba, Tokorozawa; Yoshiaki Wada, Niigata; Hiroshi Miida, and Sumio Ono, both of Kashiwazaki, all of Japan, assignors to Kabushiki Kaisha Riken, Tokyo, Japan

Filed Jun. 21, 1984, Ser. No. 623,212

Claims priority, application Japan, Nov. 24, 1983, 58-180143[U]

Int. Cl.⁴ F16J 9/06

U.S. Cl. 277—140 **3 Claims**



1. In a piston ring assembly including an expander which comprises a circumferentially extending corrugated strip having a plurality of corrugations extending in a radial plane, a plurality of circumferentially spaced upper and lower tabs projecting substantially vertically from the top and bottom edges of the inner periphery of the corrugated strip and inclined radially inwardly, seating pieces extending vertically from the top and bottom edges of the outer periphery of the strip, and upper and lower side rails having their inner peripheral edges in abutting contact with said upper and lower tabs, respectively, and their inner side surfaces resting on the seating pieces to provide a small clearance between the inner side surfaces of the side rails and the remaining portions of the edges of the strip, the improvement wherein the corrugated strip is provided with a vertically extending notch in the top and bottom edges thereof on either side of each tab.

4,542,908

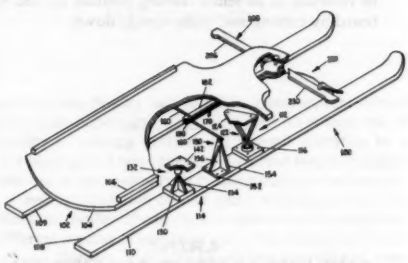
SLALOM SLED ARRANGEMENT

John R. Muyskens, 74 E. 16th St., Holland, Mich. 49423

Filed Aug. 23, 1982, Ser. No. 410,334

Int. Cl.⁴ B62B 13/12

U.S. Cl. 280—21 A **20 Claims**



1. A slalom sled arrangement for use by a sled rider and adapted to be controllable by said rider for turning and braking operations, said sled arrangement comprising:

platform means for providing a positioning location for said sled rider;

ski means mounted beneath said platform means for providing sliding surfaces to said sled arrangement and traversing through snow by gravitational effects, said ski means comprising a pair of skis each mounted on opposing lateral sides of said sled arrangement;

forward support means connecting said platform means and said ski means for supporting said platform means above said ski means at a position forward of a longitudinal midpoint of said ski means;

rear support means connecting said platform means and said ski means for providing additional vertical support of said platform means above said ski means at a position rearward of said longitudinal midpoint of said ski means and a longitudinal midpoint of said platform means;

steering means connected to said ski means for manually controlling direction and braking of said sled arrangement by said rider;

said forward support means comprising first pivot means and first rigid portions interconnecting said first pivot means and said platform means, wherein said first pivot means provides pivotal movement and conical rotation of front portions of each of said skis through a vertical axis extending upward from each ski relative to said platform means, and wherein said first pivot means comprises a first single pivot center on each axis below a vertical midpoint between said platform means and said ski means, with each of said skis effecting both tilting and turning movements at said first single pivot centers relative to said first rigid positions; and

said rear support means comprising second pivot means and second rigid portions interconnecting said second pivot means and said ski means, wherein said second pivot means provides pivotal movement and conical rotation of rear portions of each of said skis through an additional vertical axis extending upward from each ski relative to said platform means, and wherein said second pivot means comprises a second single pivot center on each additional axis above a vertical midpoint between said platform means and said ski means, with said second rigid portions effecting both tilting and turning movements at said second single pivot centers relative to said platform means, and further wherein the vertical offset of said first and second pivot centers associated with one of said skis allows said one ski to turn relative to a normal longitudinal axis of said one ski while simultaneously tilting at said first and second pivot centers in response to forces applied on said steering means by said sled rider.

4,542,909

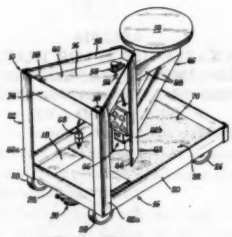
TV CAMERA CART

Kenneth M. Littwin, and Gabriel R. Buky, both of Chicago, Ill., assignors to Electro-Matic Products Co., Chicago, Ill.

Filed Jul. 28, 1983, Ser. No. 518,201

Int. Cl.⁴ B62B *5/04*

U.S. Cl. 280—79.1 A **5 Claims**



1. A TV camera cart for use with a tripod of which the legs have large feet elements, comprising,

a frame and wheels mounted therein for supporting the cart on the floor,

the frame including a lower platform for placement of pieces of TV equipment, the lower platform being of rectangular shape,

the frame also including an elevated platform for mounting thereon of a tripod supporting a TV camera,

the elevated platform being of triangular shape, having its base end substantially in register with a front end of the lower platform, and its apex end extending over the lower platform toward the rear end of the lower platform, but terminating short of the latter, providing great area of the lower platform uncovered by the elevated platform, and

locking means on the elevated platform including adjustable brackets moveable into and out of position over the feet elements for releasably securing tripod in place on the elevated platform.

4,542,910

MOTORCYCLE SUSPENSION SYSTEM

Masae Watanabe, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

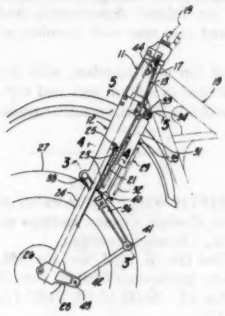
Filed Jan. 25, 1983, Ser. No. 460,768

Claims priority, application Japan, Jan. 25, 1982, 57-10459; Sep. 20, 1982, 57-162232

Int. Cl.⁴ B62K *21/02*

U.S. Cl. 280—276 **15 Claims**

1. In a suspension system for the wheel of a motorcycle or the like comprising a first sprung member, a second unsprung member supported for suspension movement relative to said first member along a line, a wheel rotatably supported by said second member, a suspension element having opposite ends and means for loading said suspension element upon movement of said first member relative to said second member along said line comprising a first link pivotally connected to said first member, a second link pivotally connected to said second



member, means for pivotally connecting said links to each other and means for connecting one end of said suspension element to said first link between its pivotal connection to said first member and its pivotal connection to said second link for loading said suspension element upon relative movement between said members.

4,542,911

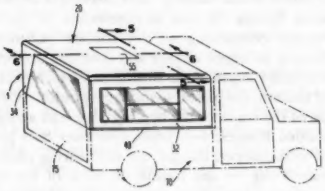
FOLDING CAP FOR PICK-UP TRUCK

Robert J. Mulligan, 26 Oakford Glen, Clarks Summit, Pa. 18411

Filed Apr. 25, 1983, Ser. No. 488,209

Int. Cl.⁴ B62D *53/00;* **B60J** *7/10*

U.S. Cl. 280—423 R **7 Claims**



1. In combination with a truck having a box defined by upstanding walls and a fifth wheel means positioned in said box, a rigid, foldable, substantially weather-resistant camper body comprising:

a rectangular rigid, water-resistant top wall member said top wall member having an opening therein above said fifth wheel means so that the king pin of a trailer means may extend downwardly to said fifth wheel means;

a cover selectively detachably secured to said top wall member so as to close said opening at times;

rigid longitudinal side wall members having top and bottom horizontal edges and front and rear vertical edges, said side wall member being hinged along the bottom horizontal edges of said side wall members to the longitudinal upstanding walls of said box, so that said side wall members are foldable downwardly toward said box;

a rigid front wall member being selectively detachably securable to the forward vertical edges of said side wall members;

a rigid rear wall member being selectively detachably securable to the rear vertical edges of said side wall members;

said top wall member being selectively detachably securable to said side wall members and said front and rear wall members;

said front wall member and said rear wall member being receivable within said box;

said top wall member being selectively detachably securable to the longitudinal edges of said box when said side wall members are folded' downwardly and said front wall member and said rear wall member are situated within said box;

whereby said top wall member, with front, rear and side walls in folded condition and said top wall member secured to said box, forms,a weather-resistant cover for said box.

4,542,912

TRACTOR FIFTH WHEEL BEARING ATTACHMENT

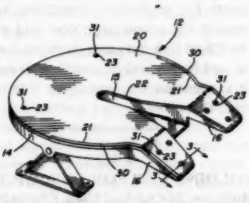
André St. Louis, Quebec, Canada, assignor to Cham-Co Plastic Industries Inc., Chambly, Canada

Filed Dec. 6, 1983, Ser. No. 558,458

Claims priority, application Canada, Feb. 28, 1983, 422499

Int. Cl.⁴ B62D *53/08*; F16C *17/04*

U.S. Cl. 280—433 **3 Claims**



1. In a fifth wheel attachment assembly on a tractor for connecting a tractor to a trailer, including a substantially circular fifth wheel metal bearing plate, having a central slot and two sloped flanges for ease of connection to the trailer, the improvement comprising an anti-friction polyolefin plastic sheet forming an upper surface and covering the bearing plate and the sloped flanges of the fifth wheel attachment and being attached thereto, the plastic sheet having cutout portions along a portion of the edges of the bearing plate and along the edges of the sloped flanges, two protective riser bars permanently attached to the sloped flanges and the bearing plate, said riser bars located one on the outside of each of the two sloped flanges and extending along a portion of the bearing plate, said risers fitting within the cutout portions of the plastic sheet and having an elevated surface flush with the surface of the sheet with no projections or grooves between the sheet and the two bars to catch when connection between the tractor and the trailer occurs.

4,542,913

PICK-UP TYPE DRAWBAR ASSEMBLY

Kendall L. Giesmann, Traer, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 26, 1984, Ser. No. 634,513

Int. Cl.⁴ B60D *7/02*

U.S. Cl. 280—479 A **10 Claims**

1. A vehicle hitch assembly for coupling a trailing implement to the vehicle, the hitch assembly comprising:

a support frame fixed to the vehicle and having a fore-and-aft extending link slot and a curved bellcrank slot;

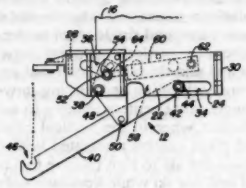
a first pin slidable fore-and-aft in the link slot;

a second pin slidable in the curved bellcrank slot;

a drawbar link having a forward end pivotally coupled to the first pin and having a rearward end including means for engaging the implement;

a bellcrank having a first part coupled to the second pin and having a second part pivotally coupled to a central portion of the drawbar link;

a pivot for pivotally supporting the bellcrank with respect to the frame; and



an actuator means coupled to the bellcrank for extending to pivot and raise the link while the first link end and the first pin move forwardly in the link slot and for retracting to pivot and lower the link while the first link end and the first pin move rearwardly in the link slot.

4,542,914

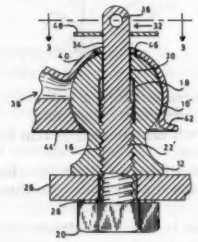
LOCKABLE HITCH FOR TRAILERN

Lucius Shropshire, 3300 Cindy La., Knoxville, Tenn. 37912

Filed Jul. 5, 1984, Ser. No. 627,856

Int. Cl.⁴ B60D *1/06*

U.S. Cl. 280—507 **6 Claims**



1. A security hitch member principally for coupling a socket member of a towed vehicle to a towing vehicle, which comprises:

a ball means having a spherical portion and a skirt portion to be mounted from a support plate of such towing vehicle with said skirt portion in contact with a top surface of said support plate, said ball means provided with an axial passageway extending through said skirt portion and said spherical portion, said passageway provided with internal screw threads throughout at least a portion of the length thereof; and

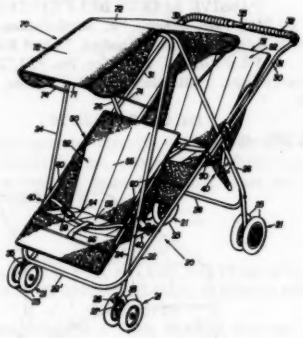
bolt means for securing said ball means to said support plate, said bolt means having an enlarged head at a first end to bear against a bottom surface of said support plate, and a shank extending from said head of sufficient length to pass through said support plate and said ball means and extend beyond such socket member when engaged with said spherical portion, said shank having external threads for threadable engagement with said threads within said passageway of said ball means, said shank being further provided with a transverse hole near a further end to receive a shackle of a locking means.

4,542,915

CARRIAGE ASSEMBLY

Charles E. Wheeler, III, and Kathleen J. Wheeler, both of 10800 Overseas Hwy., Marathon, Fla. 33050

Filed Aug. 25, 1983, Ser. No. 526,272
Int. Cl.[4] B62B 7/08
U.S. Cl. 280—642 14 Claims



1. A carriage assembly of the type designed to simultaneously carry more than one occupant, said carriage assembly comprising:

(a) frame means including wheel means attached in supporting relation thereto, said frame means structured for disposition between an extended, operative position and a collapsed, inoperative position,

(b) seat means including a first seat assembly and a second seat assembly movably mounted on said frame means in substantially tandem relation to one another,

(c) said frame means including a first support element and a second support element disposed in supporting relation to said first and said second seat assemblies respectively,

(d) each seat assembly pivotally attached to respective ones of said first and said second support elements and selectively movable relative thereto into a front and rear facing position relative to said carriage assembly,

(e) said frame means further comprising a secondary support portion disposed in substantially surrounding relation to said seat means, and a handle portion pivotally connected to said secondary support portion,

(f) said extended operative position defined by substantially linear, extended and aligned relation between said secondary support portion and said handle portion, said inoperative position defined by pivotal movement of said handle portion relative to said secondary support portion and side-by-side disposition of said first and said second seat assemblies between said handle portion and said second support portion,

(g) said first and said second support elements being disposed at a substantially angular orientation extending from a junction of interconnection therebetween to a front and a rear of said carriage assembly respectively, said first and said second support elements disposed to collectively define a substantially A-frame configuration, and

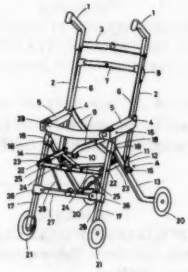
(h) shield means attached in interconnected relation to both said first and said second support elements and extending outwardly from opposite sides of said junction in substantially overhanging relation to each of said seat assemblies, whereby said seat assemblies are shielded from the sun's rays.

4,542,916

MECHANISM FOR LOCKING THE OPENED STATE OF A BABY CARRIAGE

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Nov. 4, 1983, Ser. No. 549,270
Claims priority, application Japan, Nov. 6, 1982, 57-195143
Int. Cl.[4] B62B 7/08
U.S. Cl. 280—642 3 Claims



1. A mechanism for locking the opened state of a foldable baby carriage having a pair of front legs, a pair of rear legs and a pair of pusher rods, wherein in the opened state of the baby carriage, said rear legs extend from an upper front location to a lower rear location and said pusher rods extend rearwardly upward from regions intermediate the ends of said rear legs, and wherein each of said rear legs is connected to the associated pusher rod by a support plate which is connected between the intermediate region of the respective rear leg and the corresponding pusher rod at a point spaced a predetermined distance from the lower end of the pusher rod, the arrangement being such that said pusher rods are aligned with said support plates while the lower ends of said pusher rods abut against upward surfaces of the rear legs, said locking mechanism comprising a locking member (15) for fixing the distance between the intermediate region of the rear leg and the lower end of the pusher rod, a locking pin (14) adapted to engage said locking member, and a torsion spring (45) having first and second spring ends, first means (30, 47) operatively connecting said first spring end to said pusher rod, second means (48) operatively connecting said second spring end to said locking member (15), whereby said locking member (15) is constantly urged by said torsion spring (45) in a direction which causes the locking member (15) to engage said locking pin (14), said locking member (15) having such a locking recess (49) that said locking recess (49) automatically receives said locking pin (14) while moving in a slide contact with said locking pin when said locking member (15) approaches said locking pin (14), said second spring end being shaped to form an unlocked state retaining member (50) which abuts against said locking pin (14) for retaining the locking member (15) disengaged from said locking pin (14) against the force of said torsion spring (45).

4,542,917

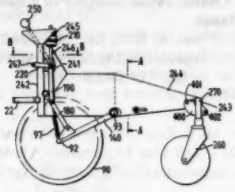
WHEELCHAIRS

Brian Waite, Lower Barn, Bodiam, Robertsbridge, Sussex, United Kingdom

Division of Ser. No. 329,110, Dec. 9, 1981, Pat. No. 4,483,653.
This application Aug. 22, 1983, Ser. No. 525,236
Int. Cl.[4] B62B 3/02
U.S. Cl. 280—650 8 Claims

1. A wheelchair for handicapped or elderly persons, comprising a generally rectangular box-like frame, a seat supported in the frame, the frame being supported on at least three wheels when resting on the ground and each of the wheels being retractable toward the frame when the wheelchair is lifted off

the ground to facilitate transfer of the suspended chair through a door opening in a motor vehicle, and means for oppositely



inclining the axes of at least the two rear wheels when the wheels are retracted to reduce the track width at the base of the chair.

4,542,918

FOLDABLE WHEELCHAIRS

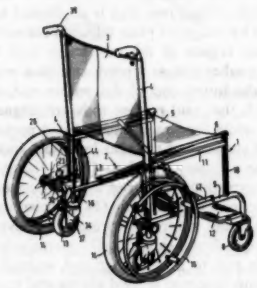
John M. Singleton, Salisbury, England, assignor to The Spastics Society, London, England

Filed Oct. 19, 1982, Ser. No. 435,285

Claims priority, application United Kingdom, Oct. 27, 1981, 8132270

Int. Cl.⁴ B62M *1/14*

U.S. Cl. 280—650 **9 Claims**



1. A foldable wheelchair comprising two side frame assemblies connected together by a foldable link to which a flexible seat panel is secured extending between said two side frame assemblies, said two side frame assemblies each having a rear upright frame member to which a flexible back panel is secured also extending between said two side frame assemblies, each said side frame assembly mounting a front castor wheel, a rear castor wheel and a further rear wheel positioned outboard and adjacent to said rear castor wheel, each said rear castor wheel being slidably supported on the respective rear upright frame member for vertical movement relative to said adjacent further rear wheel between a raised position and a lowered position, respective spring means biassing each said rear castor wheel to said raised position, a respective manually operable control mechanism for each said rear castor wheel, each said control meachanism including a handle located relative to the respective rear upright frame member for accessbile actuation by the user seated on the wheelchair, each said handle being mounted for swinging movement from a first postion to a second position and being operatively connected to a respective control rod to move the respective rear castor wheel to the lowered position against said spring means on actuation of said handle and, a respective releasable mounting for each said further rear wheel whereby, in said raised position, each said rear castor wheel is clear of the ground and each said adjacent further rear wheel engages the ground for manual self-propulsion of the wheelchair by the user seated on the wheelchair and, in said lowered position, each said rear castor wheel engages the ground and each said adjacent further rear wheel is raised clear of the ground to permit removal of said further rear wheel from the respective mounting with subsequent advancement of the wheelchair being achieved on said front and said rear castor wheels.

4,542,919

PASSIVE SAFETY BELT SYSTEM

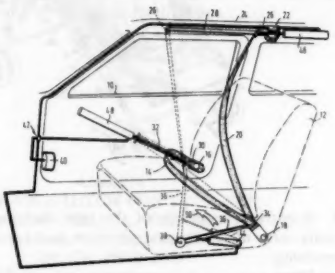
Robert F. Else, Lock Heath, Nr. Southampton, England, assignor to Britax (Wingard) Limited, United Kingdom

Filed Aug. 16, 1983, Ser. No. 523,729

Claims priority, application United Kingdom, Sep. 4, 1982, 8225251

Int. Cl.⁴ B60K *21/10*

U.S. Cl. 280—804 **9 Claims**



1. A motor vehicle having a seat adjacent to a door, the seat being provided with a safety belt, a master piston-and-cylinder unit connected between the door and the vehicle body so that opening and closing movements of the door cause displacement of fluid therein, the location of the connection of the master piston-and-cylinder unit to the vehicle body relative to the door hinge pivot axis being such that the master piston-and-cylinder unit passes through a dead-center position between the half open and fully open positions of the door, a slave piston-and-cylinder unit, having smaller bore and larger stroke than the master piston-and-cylinder unit, fluidically connected to the master piston and cylinder so that a relatively short displacement of the piston of the latter causes a longer displacement of the piston of the former, the slave piston-and-cylinder unit being connected to the safety belt adjacent to one of the anchorages thereof and arranged to displace the safety belt forwardly away from the seat as the adjacent door is opened.

4,542,920

VEHICLE REAR-SUSPENSION MECHANISM

Takao Kijima, and Jiro Maebayashi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 5, 1983, Ser. No. 510,813

Claims priority, application Japan, Jul. 7, 1982, 57-118121; Jul. 7, 1982, 57-118122; Jul. 13, 1982, 57-121427; Jul. 16, 1982, 57-124121

Int. Cl.⁴ B60G *3/26, 7/00*

U.S. Cl. 280—701 **20 Claims**

1. A vehicle rear-suspension mechanism for use with a vehicle body having rear wheels, said mechanism comprising

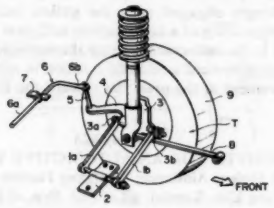
two body side support members each pivotably connected to the vehicle body,

wheel supports for supporting the rear wheels for rotation,

a resilient connecting means including at least one resilient bushing for connecting each wheel support to the body side support member to permit the wheel support to

change its position with respect to the body side support member, and

a stabilizer whose ends are connected to the respective wheel supports so that a counterforce applied to one of



said wheel supports, when the one rear wheel of said one wheel support bumps, produces a deformation in the resilient connecting means to thereby cause the one rear wheel to toe in.

4,542,921

APPARATUS FOR ACCOMODATING AND COMPENSATING ANGULAR DEFLECTIONS OF PIPE CONDUITS

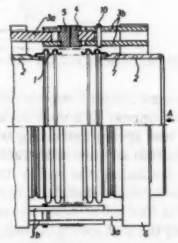
Wilhelm Marti, Horw, and Fredy Reichen, Lucerne, both of Switzerland, assignors to Boa A.G. Luzern, Lucerne, Switzerland

Filed Feb. 18, 1983, Ser. No. 467,825

Claims priority, application Switzerland, Feb. 25, 1982, 1165/82

Int. Cl.⁴ F16L *27/00*

U.S. Cl. 285—114 **7 Claims**



1. An apparatus for accommodating and compensating angular deflections of pipe conduits, said apparatus including two rigid cylindrical sleeves each adapted to be joined to a pipe section of a pipe conduit, said sleeves interconnected by a spring bellows, the improvement comprising:

a first pivot section mounted to one of said rigid cylindrical sleeves and a second pivot section mounted to the other of said cylindrical sleeves,

said first and second pivot sections each having joint plates that extend towards the other,

a rolling contact wedge member carried by the joint plates of one of said pivot sections and having a rounded apex section of a given angle,

a rolling contact prism member carried by the joint plates of the other of said pivot sections and having a V-shaped groove the two flanks of which enclose an angle that is greater than the given angle of said rounded apex section of said rolling contact wedge member, said apex of said wedge member positioned in said groove of said prism member so that said wedge member and said prism member engage each other along a line of contact, and

said rolling contact prism member being made of a softer material than the material of said rolling contact wedge member,

whereby any reactive forces acting on said cylindrical sleeves generate at the line of contact between said rolling contat prism member and said rolling contact wedge member a hertz-like pressure that permits substantially frictionless angular movement between said rolling contact wedge member and said rolling contact prism member.

4,542,922

FITTING FOR CONNECTING CIRCUMFERENTIALLY RIBBED INSULATING TUBES OF PLASTIC

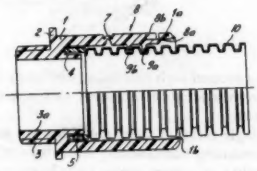
Alfred Grossauer, Stansstad, Switzerland, assignor to Agro Ag., Switzerland

Filed Jan. 26, 1983, Ser. No. 461,009

Claims priority, application Switzerland, Feb. 5, 1982, 699/82

Int. Cl.⁴ F16L *39/00*

U.S. Cl. 285—320 **1 Claim**



1. A fitting for connecting a tube which has circumferentially extending axially spaced ribs and recesses defined between the ribs, comprising a receiving socket having an opening into which the tube is fitted, said socket having a wall including a slot therein adapted to overlie the tube, a locking element engageable in the slot having one end adapted to be secured to said receiving socket and including an intermediate flexible bending portion, and an opposite end with a flexible locking lip engageable below the interior of said receiving socket in a locking position and being oriented by said bending portion to extend at an acute angle above said socket in a disengaged position, said locking element having an inner surface facing the interior of said socket with at least one tube-recess engagement rib projecting toward the interior of said socket which in the locking position engages into a recess between ribs of the tube to lock it in said socket, said socket having an interior wall with an elastic sealing member therein, the tube being adapted to be engaged against said sealing member under pressure to align the recess with the tube recess engagement rib, said locking element including on its end opposite to said bending portion a lip formed by a recessed portion of said locking element extending to a depth substantially equal to the depth of the wall of said socket member, said lip being engageable below the interior of the wall of said socket member, said locking element being connected to said socket adjacent said bending strip, said socket wall having an edge strip circumferentially continuous with said socket, said locking lip being engageable below the interior wall of said edge strip.

4,542,923

DUCT JOINTING SYSTEM

Frank X. La Crosse, 445 E. 42nd St., Hamilton, Ontario, Canada (L8T 3B2), and Waldemar H. Greiner, 11 Harrisford St., Unit 55, Hamilton, Ontario, Canada L8K 6L7

Filed Dec. 7, 1983, Ser. No. 558,963

Int. Cl.⁴ F16L *25/00*

U.S. Cl. 285—424 **15 Claims**

1. A duct jointing system comprising:

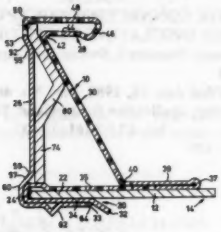
a plurality of elongate frame members, each said frame

member being a single piece of sheet metal folded to define a section which includes

(a) an open channel for receiving an edge portion of one wall of a sheet metal duct, the channel having a base against which said edge portion can abut,

(b) a first web extending generally perpendicularly to said channel from a location adjacent the base thereof,

(c) an outer portion at the end of the first web which is remote from the channel, the outer portion extending in the same general direction as the channel, and



(d) a second web extending obliquely toward the channel from a location adjacent said remote end of the first web;

said single piece of sheet metal having an expanded portion constituting substantially the whole of said second web,

a plurality of corner pieces each having two ends angled to each other, each end being insertable endwise into one end of one of the elongate frame members,

and means for securing together adjacent frame members on opposing duct ends.

4,542,924

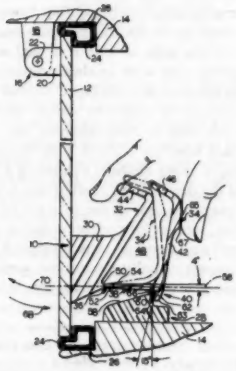
DEFLECTABLE UNITARY LATCH

William J. Brown, Naperville, and John M. Parks, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 27, 1983, Ser. No. 508,305

Int. Cl.⁴ E05C *3/14*

U.S. Cl. 292—87 **7 Claims**



1. A deflectable unitary latch adapted to be connected, in use, to a swingable window or the like to permit the window to be releasably secured to a frame having a striker member thereon, the latch comprising:

a base adapted to be connected to the window;

a handle extending from the base; and

an arm extending from the base said arm formed by a proximal hinge portion adjacent to the base, a support strut which extends outwardly from the hinge portion generally along a central plane, a latch portion, and a press bar which extends from the support strut at a first angle from the central plane in generally overlying relationship to the handle said handle extending at a second angle from the central plane, the latch portion adapted in use to be interlockingly engaged with the striker member, the hinge portion being of a construction sufficient for allowing the arm to be deflectably swung therearound from a latched position toward a released position in response to manual movement of the press bar toward the handle.

4,542,925

BUMPER FOR AN AUTOMOTIVE VEHICLE

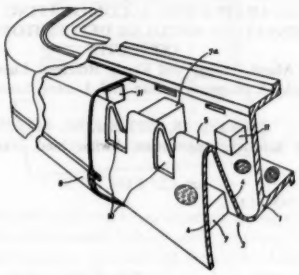
Guntram Huber, Aidlingen; Wolfgang Fischer, Leinfelden, and Wolfgang Klie, Korntal, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 26, 1983, Ser. No. 526,772

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1982, 3232940

Int. Cl.⁴ B60R *19/08*

U.S. Cl. 293—120 **22 Claims**



1. A bumper arrangement for an automotive vehicle comprising:

a bending-resistant bumper support and means for fixedly attaching the support to a vehicle; and

an undulating leaf spring extending over the length of the bumper support at an outwardly facing side of the support and a cover for hiding the leaf spring from view;

wherein the leaf spring is integrally formed with the bumper support and is formed of synthetic resin, and wherein the wavy form of the leaf spring extends perpendicular to the longitudinal direction of the bumper support with the tangential planes of the apical regions of the undulating leaf spring extending horizontally.

4,542,926

DECORATIVE OR PROTECTIVE MOLDING FOR A VEHICLE BODY

Willi O. Treber, Wuppertal, and Günter Fritsch, Ennepetal, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Oct. 21, 1983, Ser. No. 544,439

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1982, 3241906

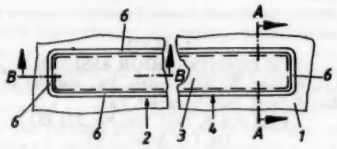
Int. Cl.⁴ B60R *13/04*

U.S. Cl. 293—128 **19 Claims**

1. A molding for application to an automotive vehicle, comprising:

a molding body, having a surface for being fastened to a surface of the vehicle; the body having a periphery when it is fastened to the vehicle and further being shaped for providing a peripheral groove between the body and the vehicle surface around the periphery of the body;

a frame comprised of a material having elastic properties for being removably mounted in a position surrounding the periphery of the body and resting against the vehicle; the frame having an inner edge region which faces in toward



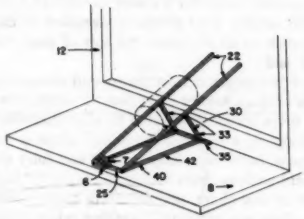
the periphery of the body and which is received in the peripheral groove when the frame is mounted; the frame being sufficiently elastic that it may be removed from the mounted position and returned to the mounted position while the molding body is fastened to the vehicle surface.

4,542,927

FIREPLACE LOADING TOOL

Eugene E. Missman, 2300 N. 26th St., Boise, Id. 83702

Filed Mar. 29, 1984, Ser. No. 594,853
Int. Cl.[4] A47J *49/00*
U.S. Cl. 294—9 **11 Claims**



1. A fireplace loading tool comprising:

a pair of longitudinally extending, laterally and parallel spaced tines affixed to one another by at least one cross member for supporting a log longitudinally placed thereon;

a lever arm downwardly depending from said tines adjacent the longitudinal midpoint of said tines for pivotally engaging a support surface for obtaining mechanical advantage in the unloading of fossil fuel into a fireplace;

floor support means in engagement with said tines for holding said tines at a selected upward inclination for loading;

a log stop upwardly extending and affixed to said tines for engaging the rear surface of a log supported by said tines; and

a handle connected to the rearmost portion of said tines for pivoting said lever arm for unloading fossil fuel supported by said tines.

4,542,928

CRANE/HOIST FORKLIFT-TYPE LIFTING APPARATUS

Aubrey A. Fowler, Jr., P.O. Box 416, Fairmont, N.C. 28340

Continuation-in-part of Ser. No. 487,319, Apr. 21, 1983. This application Aug. 14, 1984, Ser. No. 640,518
Int. Cl.[4] B66C *1/00*
U.S. Cl. 294—81.1 **3 Claims**

1. A forklift-type lifting apparatus for use with an overhead crane, hoist, or the like, having a main lift cable, said apparatus comprising:

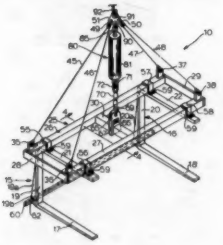
(a) a pair of C-shaped claws, each having a pair of substantially parallel vertically-spaced bottom and top arms extending generally horizontally and a vertical backrest joined thereto;

(b) a rectangular frame structure having integrally joined side bars and a strengthening member located midway of the length of and connected to said side bars;

(c) claw support means serving to support and secure said claws on said structure such that said claws assume essentially parallel positions on said structure and said top arms of said claws extend between said side bars;

(d) means providing cable attachment and support points at each of four positions on said lifting apparatus corresponding to corners of a rectangle defined by said positions;

(e) frame structure lift means including a lift element adapted to be secured to and lifted by a said main lift cable and attached to and extending between said lift element and each of said support points a frame structure lift cable of fixed length;



(f) a central support linkage having an upper end connected to said lift element, a lower end, and a spring connection between said upper and lower ends requiring spring loading prior to the load on said lower end being transferred to said upper end; and

(g) a bracket member slidably mounted on said strengthening member enabling the balance point of said frame structure to be adjusted and including means to adjustably secure said bracket member to said member to establish a selected balance point, the said lower end of said support linkage being connected to said bracket member at said selected balance point, whereby said frame structure lift cables are normally slack prior to the load being transferred to said upper end of said support linkage to enable said fork-lift type lift apparatus when not loaded to be supported by said central support linkage and to be maneuvered around said point of balance and when loaded to support said forklift-type apparatus and the load thereon by said frame structure lift cables.

4,542,929

ARTICULATING CLAM TYPE GRAPPLE FOR A BACKHOE

Warren K. Possinger, 14433-106th Pl. NE., Bothell, Wash. 98011

Filed Sep. 1, 1983, Ser. No. 529,024
Int. Cl.[4] B66C *3/16*
U.S. Cl. 294—88 **12 Claims**

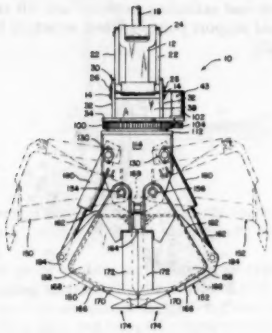
1. A grapple device for attachment to a backhoe dipper stick and tool cylinder or the like, comprising:

(a) a connector head connected for controlled positive movement attachment to said dipper stick and tool cylinder and including a connector head base plate having top and underside surfaces, said connector head base plate having supported thereon motor driven pinion gear means,

(b) a combination gear and bearing assembly having a first portion thereof secured to said underside surface and supported by said base plate of said connector head, and a second portion thereof rotatably supported on said first

portion and adapted to receive a rotatable mounting assembly, said second portion having drive gear means for being engaged and rotatably driven by said motor driven pinion gear means on said base plate,

(c) a mounting assembly mounted on said second portion of said gear and bearing assembly, said mounting assembly including a top wall which is connected to said second portion of said gear and bearing assembly and further including spaced apart side walls depending from said top wall, said side walls being substantially parallel and of approximately the same configuration and defining between them a working area which is generally open between the ends and at the bottom of said side walls, said working area including grapple jaw connecting means and



hydraulic cylinder connecting means above said grapple jaw connecting means,

(d) a pair of grapple jaw means pivotally secured to said grapple jaw connecting means such that said jaw means can be pivoted together for a closed position and pivoted apart for an open position, said grapple jaw means each being operatively moved by hydaulic cylinder means connected between said hydraulic cylinder connecting means and said grapple jaw means, and

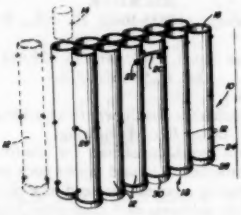
(e) hydraulic manifold means supported on said base plate and extending downwardly through an opening therein and through said gear and bearing assembly into said working area to provide hydraulic fluid for said hydraulic cylinder means.

4,542,930

RIGID TUBE TYPE BEVERAGE CAN CARRIER

Mark S. Adams, Indian Trail, R.F.D. 1, New Milford, Conn. 06776

Filed Jan. 6, 1984, Ser. No. 569,251
Int. Cl.[4] B65D *71/00*
U.S. Cl. 294—160 **11 Claims**



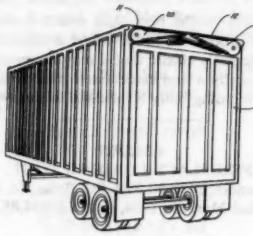
1. A carrier for beverage containers comprising a plurality of rigid tubular members oriented in side by side coextensive relation, means rigidly and detachably connecting said tubular members, means forming a movable retainer for the lower ends of said tubular members with the upper ends being open to receive vertically oriented containers to enable insertion of the containers into the open upper ends of the tubular members and gravity discharge from the lower ends thereof, and handle means attached to said tubular members to enable the carrier to be carried.

4,542,931

TOP OPENING DOOR ASSEMBLY

Harold E. Walker, Jr., Meyersdale, Pa., assignor to Somerset Welding & Steel, Inc., Somerset, Pa.

Filed Sep. 9, 1983, Ser. No. 531,152
Int. Cl.[4] B60P *7/02*
U.S. Cl. 296—100 **13 Claims**



1. Top opening doors for a trailer or the like comprising:

a first and second door pivotally mounted to each side of said trailer so as to cover the top of said trailer when closed; and

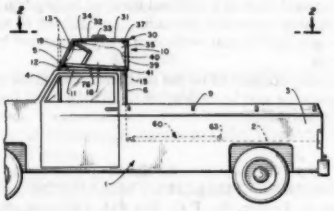
positive drive means connected to said doors including an endless chain, a master drive link for stable driving action and a drive motor connected to said chain for actuating said doors in a controlled manner about a full 270° of movement between a fully opened and fully closed position; said endless chain including means for adjusting the tension of said chain, said adjusting means forming a link of the chain and crossing in guiding relationship between spaced straps of said master drive link.

4,542,932

FOLD-UP CAMPER

Gary D. Whiteman, 2630 Townsgate Rd., Unit H, Westlake Village, Calif. 91361

Filed Oct. 19, 1983, Ser. No. 543,310
Int. Cl.[4] B60P *3/34*
U.S. Cl. 296—160 **9 Claims**



1. A collapsible camper comprising:

(a) a container having base means and means for mounting the base means at an elevated position of a vehicle and cover means and cover mounting means for mounting the cover means in at least two positions to the base means, an upper position generally above the base means and creating a cavity between the base means and the cover means

and a lower position depending from the base means below the elevated position of the vehicle;

(b) canopy means attached to the container and foldable into the cavity and extendible from the base means over the cover means in its lower position to a remote location on the vehicle to act as a tent; and

(c) anchor means extending between the canopy means and the vehicle for anchoring the canopy means to remote location,

wherein the base means has a forward edge extending parallel to the front of the vehicle at the forward portion of the base means and a rear edge generally parallel to and rearward of the forward edge, the cover mounting means comprising a hinge mounted along the rear edge for hinging the cover means relative to the base means between the upper and lower positions, and the cover means has a generally vertical member extending from the hinge and a horizontal member extending from a upper portion of the vertical member and parallel to the base means in the upper position.

4,542,933

CAMPER SUPERSTRUCTURE

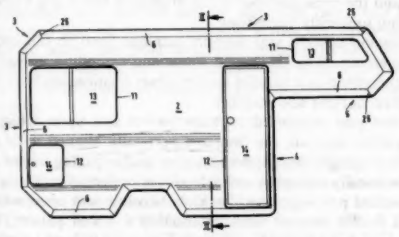
Rainer Bischoff, Industriestrasse 12, 5403 Muelheim-Kaerlich, Fed. Rep. of Germany

Filed Feb. 4, 1982, Ser. No. 345,693

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 8103178[U]; Apr. 16, 1981, 3115452.2; Dec. 12, 1981, 3149368

Int. Cl.⁴ B60P *3/32, 1/64;* **B62D** *29/04*

U.S. Cl. 296—164 **10 Claims**



1. A camper structure adapted to be mounted on a vehicle chassis and comprising:

a one-piece element defining a front wall, a top wall angularly adjoining the front wall and a rear wall angularly adjoining said top wall at respective angular junctions, said one-piece element being composed of a hard-foam plate sandwiched between aluminum layers, an outer one of said aluminum layers being bent at each of said junctions, said plate being mitered at each of said junctions to form adjoining edges adhesively bonded together;

a pair of side walls extending perpendicularly to the front, top and rear walls, said front, top and rear walls being connected to said side walls by connector strips each receiving an edge of said side wall and an edge of a respective one of said front, top and rear walls, said connector strips extending peripherally all around said side walls and adjoining one another at abutting mitered edges at which said connector strips are welded together so that the connector strips around the periphery of each side wall form a closed stabilizing ring, each of said side walls being composed of a hard-foam plate sandwiched between aluminum layers;

a T-section member lying substantially in a plane perpendicular to said front, rear and side walls and adhesively bonded to inner ones of said aluminum layers of said front, rear and side walls in a circumferentially closed configuration whereby a flange of said member projects inwardly all along said circumferentially closed configuration;

a floor composed of an insulating foam plate sandwiched between upper and lower layers secured from below to said flange all around said circumferentially closed configuration; and

reinforcing connecting strips extending along the bottom of said rear wall and across said front wall and welded to said rings whereby said strips, said walls and said floor form a self-supporting box.

4,542,934

FRONT BODY CONSTRUCTION FOR MOTOR VEHICLE

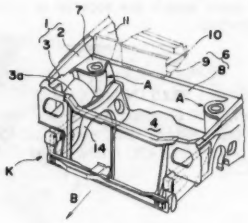
Nobuhiro Komatsu; Minoru Fujimoto; Kazuyuki Hirata, all of Hiroshima, and Makoto Yamane, Higashihiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 10, 1983, Ser. No. 465,484

Claims priority, application Japan, Mar. 8, 1982, 57-36936

Int. Cl.⁴ B62D *25/08*

U.S. Cl. 296—194 **3 Claims**



1. A front body construction for a motor vehicle having a frame structure extending in the longitudinal direction of a body of said motor vehicle, said front body construction comprising:

first and second upper wheel-aprons which constitute a portion of said frame structure;

first and second lower wheel-aprons which constitute a portion of said frame structure;

said first and second upper wheel-aprons defining, in cooperation with said first and second lower wheel-aprons, a pair of opposite side walls of an engine room disposed at a front portion of said body;

said first and second upper wheel-aprons each having a U-shaped cross section and constituting, in cooperation with first and second wheel-apron reinforcements secured to open portions of said first and second upper wheel-aprons, respectively, first and second frame members of closed cross section extending in the longitudinal direction of said body;

said first and second upper wheel-aprons each having a lower horizontal portion, an intermediate vertical portion and an upper horizontal portion formed sequentially in this order so as to constitute a substantially U-shaped cross section;

said lower horizontal portion having an inner side edge disposed inwardly in the sidewise direction of said body such that said intermediate vertical position extends upwardly and substantially in the vertical direction of said body from said inner edge of said lower horizontal portion;

said upper horizontal portion extending outwardly in the sidewise direction of said body from an upper edge of said intermediate vertical portion;

said lower horizontal portion and said upper horizontal portion of each of the upper wheel aprons being secured to one of said first and second wheel-apron reinforcements such that a closed cross-section is formed by each of said first and second upper wheel-aprons and the correspond-

ing one of said first and second wheel-apron reinforcements;

said first and second lower wheel-aprons including first and second lower panels and first and second upper panels, respectively;

said first and second lower panels having first and second projecting portions, respectively, extending inwardly in the sidewise direction of said body;

said first and second upper panels being secured to upper portions of said first and second projecting portions, respectively, for defining first and second suspension towers in cooperation with said first and second projecting portions;

said first and second upper panels having first and second outer side edge portions, respectively, disposed outwardly in the sidewise direction of said body such that said first and second outer side edge portions are secured to a lower face of each of said lower horizontal portions of said first and second upper wheel-aprons, respectively; and

first and second dash panels which are disposed rearwardly of said first and second upper panels, respectively, and have first and second flange portions attached to each other and extending in the sidewise direction of said body, respectively, such that rear edge portions of said first and second upper panels are secured to a face of said first flange portion.

4,542,935

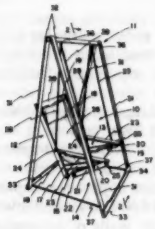
RECLINING CHAIR

James L. Roof, 2110 Leaphart Rd., West Columbia, S.C. 29169

Filed May 5, 1982, Ser. No. 374,948

Int. Cl.⁴ A47C *1/034;* A63G *9/00*

U.S. Cl. 297—82 **6 Claims**



1. A reclining chair comprising: a seat portion having a bottom, a front area and a rear area; a back rest poriton pivotably connected to the rear area of said seat portion and movable from a generally upright position to a downward reclined position; a leg rest portion pivotably connected at a point intermediate its ends to the front area of said seat portion and movable from a tucked position underneath the bottom of said seat portion to an extended position where the leg rest portion extends outwardly from the front area of said seat portion; arm rest means pivotably said back rest portion and to one end of said leg rest portion and operative to move said back rest portion from said generally upright position to said downward reclined position in response to said leg rest portion being moved from said tucked position to said extended position and first and second support means, said first support means connected to said back rest portion and said second support means connected to said leg rest portion with said second support means being connected to said leg rest portion at a point thereon between the other end of said leg rest portion and the pivotal connection of said leg rest portion and said seat portion; and wherein the seat portion, back rest portion, leg rest portion, and arm rest means are so proportioned that the angle of pivot of said leg rest portion as compared to said back rest portion is a ratio of approximately two to one, whereby a comfortable, easily adjustable reclining chair is provided wherein the leg rest portion is pivoted up against the bottom of the seat portion when the back rest portion is in maximum upright position and is outwardly extending from said seat portion when said back rest portion is reclined.

4,542,936

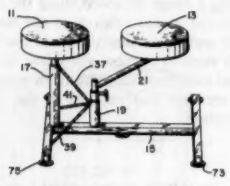
CHIROPRACTOR'S EXAMINATION STOOL

David M. Gafken, 1314 S. Main St., Auburn, Ind. 46706

Filed May 11, 1983, Ser. No. 493,474

Int. Cl.⁴ A47C *3/20, 15/00*

U.S. Cl. 297—257 **8 Claims**



1. A doctor-patient seating arrangement comprising:

a unitary base, formed as a generally H-shaped frame of tubular portions having five floor engaging feet, one each at the free ends of each arm of the H-shaped frame and one near the center of the cross-member of the H-shaped frame;

a first upright seat support member fixed to the base proximate to the intersection of one arm of the H-shaped frame and the cross-member of the H-shaped frame and extending upwardly therefrom;

a second upright seat support member fixed to the cross-member of the H-shaped frame and extending upwardly therefrom in a parallel spaced apart relationship with the first upright seat member;

a first post supported backless swivel seat upon which a patient may sit, the first seat vertically aligned with the first upright seat support member and including means for vertically adjusting and selecting a preferred seat height;

a second post supported backless movable seat upon which a doctor may sit while examining a seated patient, the second seat being laterally spaced apart from the second upright seat support member; and

an oblique seat support arm immovably fixed, at one end thereof, to the second seat and including means, near an end opposite the seat, for vertically adjusting and pivotally attaching the support arm and second seat to the second upright seat support member at a second selected preferred elevation, the preferred height of the first seat and preferred elevation of the second seat being selectable for any particular doctor and any particular patient so that the doctor may be seated on the second seat with his head at a lower elevation than the head of the patient seated on the first seat;

wherein the second upright seat support member defines a vertical axis about which the second seat may be pivoted in a substantially horizontal plane, the separation between the first and the second upright seat support members being substantially the same as the lateral extent of the first seat in relation to the first upright seat support member so that the so defined vertical axis extends closely adjacent an edge of the first seat.

4,542,937

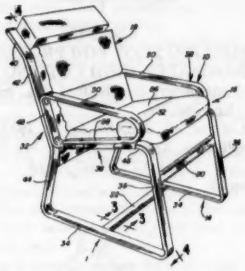
Patent Not Issued For This Number

4,542,938

FLEXIBLE CHAIR

Cosmo N. Tisbo; Thomas A. Tisbo, both of Barrington; Richard D. Recker, Palatine, and Bruce Heggeland, Rolling Meadows, all of Ill., assignors to Suncast Corporation, Batavia, Ill.

Filed Apr. 11, 1983, Ser. No. 484,144
Int. Cl.[4] A47C *1/12*
U.S. Cl. 297—445 **11 Claims**



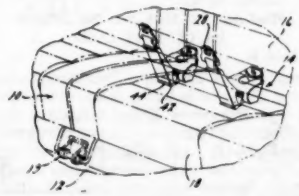
1. In a chair construction having a pair of chair sides, a seat positioned between said chair sides, a back positioned between said sides, the improvement comprising; each of said chair sides being formed of a single elongated flexible member; each of said chair sides including; a flexible back upright, an elongated horizontal floor rail having one end formed integral with the lower end of the back upright, a flexible front upright having its lower end formed integral with the other end of the horizontal floor rail, and an arm portion formed integral with the upper end of the front upright, said arm portion being fixed to the back upright, each of said flexible members having substantially flat opposed parallel elongated faces, said faces defining a pair of planes extending across the width of the chair to allow the front and back uprights to flex thereby allowing the seat to move in a substantially horizontal plane in a direction substantially parallel to the horizontal floor rails of the sides.

4,542,939

SEAT BELT POSITIONING DEVICE

James E. Geoffrey, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01366, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO84/01299, PCT Pub. Date Apr. 12, 1984
PCT Filed Sep. 30, 1982, Ser. No. 444,244
Int. Cl.[4] B60R *21/00*
U.S. Cl. 297—481 **4 Claims**



1. A seat belt positioning device for a motor vehicle body characterized in that said positioning device comprises:

(A) a seat belt;

(B) a retractor assembly secured to the body and including rotatably mounted spool means for mounting one end of said belt for protraction and retraction and spring means biasing said belt for retraction;

(C) boot means defining an aperture for guidingly receiving said belt, said boot means having a housing mounted for pivotal movement with respect to the body between a substantially vertical position and a substantially horizontal position;

(D) means defining an enlarged portion of said belt proximate the free end thereof to prevent said enlarged portion passing through said boot aperture; and

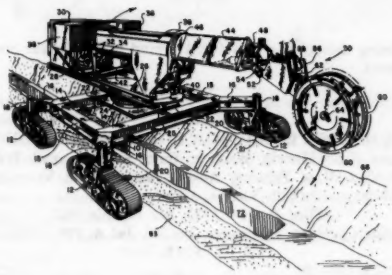
(E) means defining a hinge in said boot means housing having a pivotal axis displaced from the plane of protraction and retraction of said belt whereby upon certain retraction of said belt said enlarged belt portion engages said boot housing and said boot means is urged toward said vertical position under the influence of said retractor assembly spring means.

4,542,940

METHOD AND APPARATUS FOR CUTTING A TRENCH THROUGH ROCK-LIKE MATERIAL

Edward N. Marten, Von Ormy, Tex., assignor to H. B. Zachry Co., San Antonio, Tex.

Continuation-in-part of Ser. No. 966,338, Dec. 4, 1978, Pat. No. 4,230,372. This application Dec. 13, 1979, Ser. No. 103,231
The portion of the term of this patent subsequent to Jul. 14, 2000, has been disclaimed.
Int. Cl.[4] E21C *27/10*
U.S. Cl. 299—1 **32 Claims**



31. A method of excavating a trench having a preselected width in rock comprising:

simultaneously cutting a pair of narrow slots in the rock by means of a first self-propelled machine moveable over the surface and having a pair of rock cutter wheels carried on opposite ends of a horizontal shaft supported on an articulated boom, the length of said shaft and width of said boom being less than said preselected width and said wheels being spaced apart so that the outer edges of said slots are spaced by said preselected width and a substantial amount of material is left between the slots; and

subsequently breaking and removing the material left between the slots by a second self-propelled machine left between said narrow slots.

4,542,941

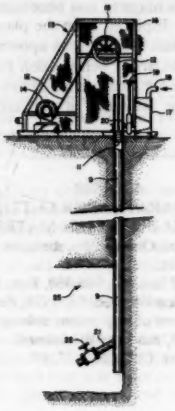
METHOD AND APPARATUS FOR CONVEYING SLURRY EXPLOSIVES

Donald M. Stromquist, 33 C St., Salt Lake City, Utah 84103

Continuation of Ser. No. 329,229, Dec. 10, 1981, abandoned. This application Jan. 13, 1984, Ser. No. 570,630
Int. Cl.[4] E21F *13/04*
U.S. Cl. 299—12 **4 Claims**

1. In combination with a mine having underground workings, apparatus for safely conveying a slurry explosive from ground surface to an underground location in said mine workings, comprising a pipeline extending from ground surface to said underground location and having an upper opening adjacent to ground surface for receiving the slurry explosive and at least one lower opening adjacent to the underground location for discharging the slurry; a plug slidably and sealingly fitted into said pipeline between said upper opening and said lower opening for movement downwardly and upwardly, and vice

versa, therein; and means for moving said plug as specified, so explosive slurry loaded into said pipeline through said upper



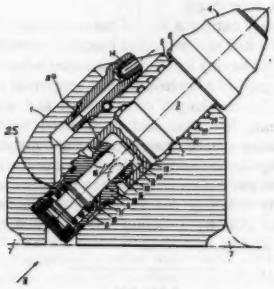
opening thereof can be safely lowered to said lower opening thereof.

4,542,942

BIT HOLDER EQUIPPED WITH A SPRAYING DEVICE

Alfred Zitz; Herwig Wrulich; Otto Schetina, and Wilfried Maier, all of Zeltweg, Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Jun. 14, 1983, Ser. No. 504,302
Claims priority, application Austria, Jul. 6, 1982, 2615/82
Int. Cl.⁴ E21B *10/60*
U.S. Cl. 299—81 **8 Claims**



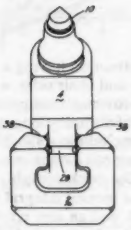
1. Bit holder equipped with a spraying device which includes a nozzle, in particular for cutting heads, comprising a receiving bore having an open outer end, said receiving bore being separate from the nozzle and receiving and supporting the shaft of the bit for limited axial shifting movement and optionally for being rotated, shifting movement of the bit shaft in direction of the cutting pressure being limited by an abutment and the bit shaft being loaded by a return force in opposite direction to the cutting pressure and a valve for the supply of water to the bit or to the drift face during cutting operation being arranged within the bit holder and being opened under the action of the cutting pressure by the axial shifting movement of the bit shaft, characterized in that the receiving bore is at least partially closed at its end located remote from the bit tip, in that the housing of the valve is arranged within the receiving bore at its deepest area and coaxially relative to this receiving bore, the end of the bit shaft located remote from the bit tip being acting on the valve shaft of the valve, and in that the wall of the receiving bore has between the seat of the valve and the mouth of the receiving bore and at an axial distance from the mouth of the receiving bore which is greater than or equal to the axial depth over which the bit shaft protrudes into the receiving bore in its position engaging the abutment at least one perforation opening at the exterior side of the bit holder.

4,542,943

EARTHWORKING TOOL FOR PROTECTING FROM ABNORMALLY HIGH CUTTING LOADS

Robert H. Montgomery, Jr., Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 366,488, Apr. 8, 1982, abandoned. This application Apr. 3, 1985, Ser. No. 719,029
Int. Cl.⁴ E21C *35/18*
U.S. Cl. 299—93 **16 Claims**



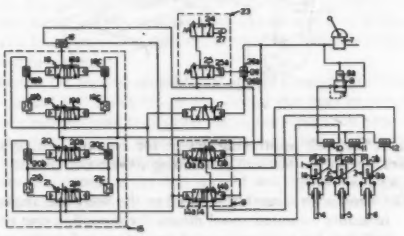
1. An assembly for use with an earthworking bit, comprising: a base having a T-shaped recess formed by the intersection of a vertical slot and a horizontal slot; a block engaging said base, said block having a shank portion and a toolholder portion extending from a first end of said shank and adapted for receiving an earthworking bit; said block having a T-shaped portion extending from a second end of said shank portion with said T-shaped portion slidably engaging said groove; and said shank having means for causing said block to preferentially fail when exposed to abnormally high cutter loads and located between said toolholder portion and said T-shaped portion.

4,542,944

MULTIPLE DISK BRAKE CONTROL

Michael D. Lyons, Lexington, Ky., assignor to American Standard Inc., Lexington, Ky.

Filed Apr. 12, 1984, Ser. No. 599,402
Int. Cl.⁴ B60T *13/00*
U.S. Cl. 303—6 R **11 Claims**



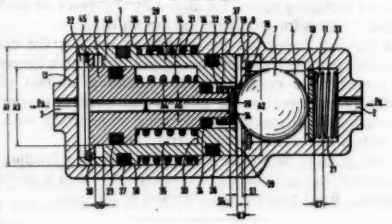
11. A method for controlling a plurality of disk brakes actuated by a plurality of disk brake actuators having respective service braking and parking brake portions, said brake controlling method comprising:

(a) regulating the delivery of a braking fluid pressure by operation of a handle valve over a range of handle travel;
(b) communicating such braking fluid pressure to a pilot portion of a relay valve;
(c) opening said relay valve when such braking fluid pressure reaches a predetermined value, said open relay valve effecting communication of a relay fluid pressure therethrough;
(d) receiving such relay fluid pressure at a first input of a plurality of actuator shuttle valves;
(e) selecting one flow path from a plurality of flow paths corresponding in number to such plurality of brake actuator service braking portions;
(f) directing such braking fluid pressure over said one selected flow path to a second input of one of said plurality of actuator shuttle valves;
(g) comparing such relay fluid pressure presented to said first actuator shuttle valve inputs with such braking fluid pressure presented to said second input of said one actuator shuttle valve and transmitting the higher of such fluid pressures to such service braking portions of such disk brake actuators; and
(h) incrementing a counter means form a count to the next count upon release of such parking brake portions of such disk brake actuators, such next count effecting said selecting of said one flow path such that, a next flow path from said plurality of flow paths is selected.

4,542,945
DECELERATION-SENSITIVE BRAKING PRESSURE CONTROL UNIT FOR A VEHICULAR HYDRAULIC BRAKE SYSTEM

Volker Berisch, Munich, Fed. Rep. of Germany, and Alfred Birkenbach, Rochester, Mich., assignors to ITT Industries, Inc., New York, N.Y.

Filed Oct. 26, 1983, Ser. No. 545,512
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1982, 3240541; Nov. 3, 1982, 3240536
Int. Cl.⁴ B60T *8/14, 8/26*
U.S. Cl. 303—6 C **4 Claims**



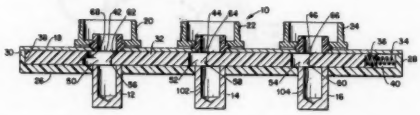
1. A deceleration-sensitive pressure control unit for the hydraulic brake system of an automotive vehicle in which said unit comprises a housing having an inlet from a source of hydraulic fluid and an outlet, connected to a wheel cylinder of the vehicle, a valve mechanism and a flow channel serially disposed between said inlet and outlet, said valve mechanism including a ball valve and a valve seat, said valve seat comprising the entrance to said channel, said channel including a central bore through a stepped piston with said channel entrance comprising the face of a stepped piston within said housing, the invention wherein there is annular piston disposed concentrically about said stepped piston, a housing step to provide a limit stop for the axial travel of the annular piston toward the housing inlet, a face step on the outlet side of the annular piston and a ring fit in an extended section of the annular piston, the face step and the ring forming limit stops for a collar extending from the outlet end of the stepped piston to limit the axial movement of the stepped piston within the annular piston, said annular piston positioned to contact the ball valve with the annular piston adjacent the limit stop at the channel entrance to space said ball valve from said valve seat to enable the continuation of flow of hydraulic fluid through said channel and said ball valve movable into channel closing relation with said valve seat with said annular piston adjacent its limit stop toward the outlet chamber, and

wherein the stepped piston has a sleeve adjacent the valve seat which is longitudinally slidable by an amount in opposition to the force of a spring, said sleeve embracing annularly and encircling the valve seat at the entrance end of the channel close to the inlet chamber and being movable into contact with the surface of the ball valve.

4,542,946
POWER SAFETY LOCK SYSTEM

Howard R. Snow, Caledonia, Ohio, assignor to Brand-Rex Company, Willimantic, Conn.

Filed Mar. 11, 1983, Ser. No. 474,359
Int. Cl.⁴ H01R *13/453*
U.S. Cl. 339—40 **5 Claims**



1. An interlock system for electrical power connections comprising:

at least three electrical contacts; two of said contacts adapted to receive electrical energy; the third contact adapted to be connected to ground; said electrical contacts adapted to be connected to three corresponding mating connectors;

said mating connectors not being encased in a common housing;

a slide bar having at least three bore holes therein; two of said bore holes having incline surfaces along a portion of one of their walls; spring means connected to said slide bar; each of said bore holes being in a slidable relation with and adjacent to a corresponding electrical contact; said slide bar having at least three positions, a first position such that said slide bar disables the connection of said electrical contacts which are adapted to provide electrical energy to its corresponding mating connector and a second position such that said slide bar enables the connection of said electrical contacts which are adapted to provide electrical energy to its corresponding mating connector; said slide bar being moved from said first position to said second position by the action of one of said mating connectors against said incline surface of one of said bore holes; said slide bar having a third position resulting from the action of another mating connector against the incline surface of a wall of another bore hole; said third position locking the connection of the contact which is adapted to be grounded to its corresponding mating connector.

4,542,947
LOCKING ASSEMBLY FOR FLUORESCENT LAMPS

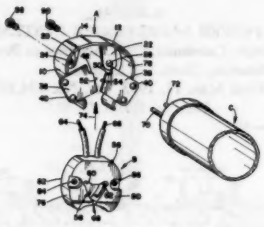
Joseph R. Flor, Livingston; Richard F. Havens, Watchung, and Peter Panayoti, Wallington, all of N.J., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 4, 1984, Ser. No. 616,911
Int. Cl.⁴ H01R *33/10*
U.S. Cl. 339—54 **24 Claims**

1. A device for securing a workpiece having axially outward extending pins at one end thereof in an installed position in an associated holder, and wherein the workpiece is rotatable about its longitudinal axis for moving the pins thereof from an installation condition to an installed condition in the holder, said device comprising:

a generally C-shaped resilient body adapted to be placed in a surrounding relationship with the outer periphery of an associated holder, said body having a pair of spaced apart end areas shiftable relative to each other between a first normal position and a second expanded condition in response to rotation of a workpiece from an installation condition to an installed condition in the associated holder;

a pair of locking members extending generally radially inward toward each other from one side edge of said body and terminating in facing edges which are spaced apart



from each other for defining a passageway therebetween, the pins of a workpiece installed in the associated holder adapted to pass through said passageway in the workpiece installation condition and act against said locking members for moving said body end areas to said expanded condition as the workpiece is rotated toward the installed position, said body automatically moving back to said normal position when the workpiece is in the installed condition to provide locking means for restricting the ease with which the workpiece may be further rotated; and,

means for cooperably mounting said body relative to an associated holder.

4,542,948

HOUSING FOR A FEMALE ELECTRICAL CONTACT

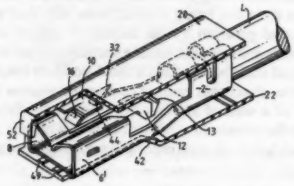
Martin Alonso, and Francisco Villazon, both of Barcelona, Spain, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 10, 1983, Ser. No. 550,663

Claims priority, application Spain, Dec. 7, 1982, 269031[U]

Int. Cl.[4] H01R *11/00*

U.S. Cl. 339—59 R **3 Claims**



1. A moulded, one-piece, open ended tubular insulating housing of substantially rectangular cross-section, for a female electrical contact, the housing comprising upper and lower walls connected by first and second side walls, and having a first, contact insertion end and a second, electrical tab insertion end, a latching boss formed integrally with the inner surface of the upper wall at a position spaced from the second end of the housing but being nearer to the second end of the housing than to the first end thereof, providing a first ramp tapering towards the first end of the housing and a latching shoulder facing the second end of the housing, a second ramp formed integrally with the lower wall of the housing opposite to the first ramp, being directed towards the first end of the housing, the latching boss being shaped as a right angle triangle, and being nearer to the first side wall than to the second, the latching boss having a flat summit, which is also shaped as a right angle triangle, which summit faces toward said lower wall and is parallel to the upper wall of the housing, the first ramp and the latching shoulder immediately adjoining the flat summit, the first ramp projecting therebeyond towards the first end of the housing.

4,542,949

CIRCUIT CARRIER CONNECTOR

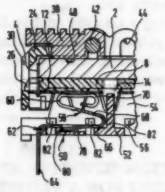
Udo Tewes, and Rolf Roeschlein, both of Paderborn, Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Jan. 11, 1984, Ser. No. 569,791

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1983, 3300706

Int. Cl.[4] H01R *9/09*

U.S. Cl. 339—75 M **16 Claims**



1. An apparatus for the plug-in assembling of a circuit carrier, provided with contact feet, onto an electrical appliance provided with receptacles, the apparatus including:

a base made of electrically insulating material and a first set of contact elements arranged for plugging into the receptacles of the appliance, the base being adapted to receive the circuit carrier so that the contact feet of the circuit carrier come into an electrically conducting connection with the first set of contact elements of the base;

a cover including means for mounting the cover on the base and a recess for receiving the circuit carrier;

first holding means on the cover for holding the circuit carrier in a fixed, predetermined position within the cover;

an intermediate contact carrier including contact plates fixedly arranged on the intermediate contact carrier for receiving and making an electrical connection with the contact feet of the circuit carrier; and

second holding means formed on the base for holding the intermediate contact carrier and the cover in a predetermined, fixed position with respect to the base.

4,542,950

ZERO INSERTION FORCE EDGE CONNECTOR WITH WIPE CYCLE

John B. Gillett, Kingston, and John A. Miraglia, West Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 21, 1984, Ser. No. 581,529

Int. Cl.[4] H01R *13/631*

U.S. Cl. 339—75 MP **26 Claims**

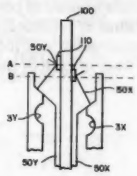
1. A zero insertion force type printed circuit board edge connector for establishing electrical contact between a plurality of contact pads disposed on at least one side of an edge of a printed circuit board and a plurality of electrical conductors, comprising:

a housing having a slot for receiving the edge of the printed circuit board;

a plurality of contacts connected through said housing to the plurality of electrical conductors and arranged into at least one row of contacts disposed within said slot; and

first means mounted on said housing for moving said plural-

ity of contacts into simultaneous abutment with the plurality of contact pads after the printed circuit board is inserted into said slot, a majority of adjacent ones of said plurality of contacts performing sequential wipe cycles on



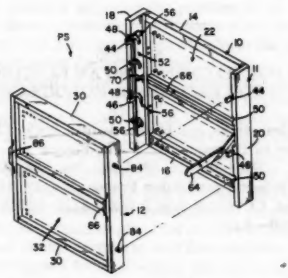
respective adjacent ones of the plurality of contact pads, adjacent ones of said plurality of contacts also performing staggered wipe cycles on respective adjacent ones of the plurality of contact pads.

4,542,951

OPERATING MECHANISM FOR A PLUGBOARD SYSTEM

Dale B. Mummey, Camp Hill, and Carl D. Oberman, New Cumberland, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 13, 1984, Ser. No. 599,902
Int. Cl.[4] H01R *13/629*
U.S. Cl. 339—75 M **12 Claims**



1. An operating mechanism for a plugboard system or the like to connect and disconnect electrical terminals of a front bay with respective electrical terminals of a rear bay, comprising:

a rear bay comprising a rear frame in which a rear panel having rows of electrical terminals is mounted;

hanger plates mounted onto opposite side members of the rear frame in alignment with each other and including guide slots therein, the hanger plates serving to receive in the guide slots thereof support members extending outwardly from side members of a front frame of the front bay;

sliding cam plates mounted on the rear frame and being movable along the hanger plates and having spaced profiled cam slots therein, the cam slots having entrance sections, angled sections and straight sections, the entrance sections extending parallel to the guide slots, the straight sections being disposed generally normal to the entrance sections and the angled sections extending between the entrance sections and the straight sections; and

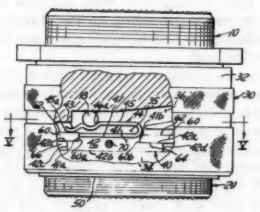
an operating member mounted onto the rear frame to move said cam plates in unison relative to said hanger plates between an inoperative position and an operative position, said operating member including a shaft extending through L-shaped openings in the cam plates, arms secured to said shaft and having bearing means thereon which are disposed in respective L-shaped openings, said bearing means being movable in said L-shaped openings when said shaft is moved by operation of said operating member to move the cam plates between said inoperative and said operative positions, so that with the support members positioned in the respective guide slots of the hanger plates and moved into said entrance sections of the cam slots, the sliding cam plates move along the side members of the rear frame causing the angled sections and the straight sections of the cam slots to move the support members along the guide slots in a straight inward direction thereby electrically connecting the respective electrical terminals of the front and rear bays together.

4,542,952

ELECTRICAL CONNECTOR ASSEMBLY HAVING LOCKING MEANS

Vladimir Tomsa, Chicago, Ill., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 27, 1984, Ser. No. 604,796
Int. Cl.[4] H01R *13/625*
U.S. Cl. 339—90 R **11 Claims**



1. An electrical connector assembly comprising first and second connector members, a coupling member rotatably carried by said first connector member, one and the other said second connector member and said coupling member being provided with a radially extending bayonet pin and a wall including a helical groove arranged to be threadably engaged by the pin for pulling the connector members together upon rotation of the coupling member in one direction, and locking means for preventing unwanted rotation of said coupling member in the other direction, said locking means being characterized by: a spring member disposed at the terminus of said helical groove for captivating said bayonet pin when the pin is advanced thereto, and a rib including a pair of angularly spaced sidewalls which define a gap extending from said wall including the helical groove, said spring member comprising a plate having lateral end faces abutted against respective of said sidewalls and mounted to the wall and a resilient leaf member having first and second end portions, said first end portion being secured to said plate and said second end portion being free to deflect and including a detent for captivating said pin, advancement of said pin to said leaf member deflecting said second end portion and advancing said pin into captivated relation with said detent.

4,542,953
WIRE CONNECTION TERMINAL STAGE FOR ELECTRIC APPARATUS

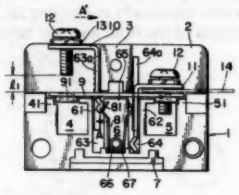
Kazumasa Iwamoto, Ashiya; Naoki Mabuchi, Takatsuki, and Junji Kawano, Osaka, all of Japan, assignors to Idec Izumi Corporation, Osaka, Japan

Filed Mar. 27, 1984, Ser. No. 594,007

Claims priority, application Japan, Apr. 1, 1983, 58-58406; Apr. 11, 1983, 58-63422

Int. Cl.⁴ H01R *9/24*

U.S. Cl. 339—198 GA **12 Claims**



1. A terminal stage for connecting a wire terminal thereto for use in an electrical apparatus having an electrically conductive terminal plate having at least two threaded holes at least two terminal screws to be screwed in said respective threaded holes, and an electrically insulating supporting member having a first wall portion substantially perpendicular to said terminal plate and supporting said terminal plate, comprising:

(a) at least two second wall portions integrally formed with said first wall portion, and in contact with said terminal plate, separated from each other, and extending in the direction substantially perpendicular to said first wall portion and said terminal plate;

(b) a substantially U-shaped elastic member mounted between said at least two wall portions and having two elastic portions extending in the direction substantially perpendicular to said terminal plate and being opposed to each other; and

(c) at least two movable members each being movable in the direction substantially perpendicular to said terminal plate and each having a first portion extending in the direction substantially parallel to said terminal plate and supportring said terminal screws, a second portion formed integrally with said first portion substantially perpendicularly to said terminal plate, and a third portion integrally formed with said second portion and extending in the direction substantially perpendicular to said first wall portion and substantially parallel to said terminal plate, said second and third portions of each of said movable members being movable between said second wall portion and said elastic wall portion of said elastic member in the direction substantially perpendicular to said terminal plate, each of said terminal screws being stably held in at least one predetermined position spaced from said terminal plate by a predetermined distance.

4,542,954
WIDE ANGLE LENS FOR THE INFRARED DEDICATORY CLAUSE

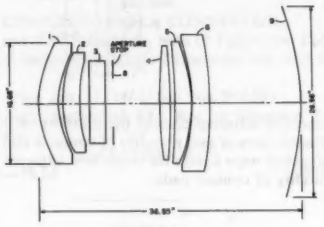
David E. Stoltzmann, Bayport, Minn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 10, 1983, Ser. No. 550,698

Int. Cl.⁴ G02B *13/14, 9/62*

U.S. Cl. 350—1.3 **1 Claim**

1. An improvement in a wide angle lens system for use in the infrared frequency band in which said system has inherent chromatic and monochromatic aberrations without corrections: the improvement comprising first, second, third, fourth, fifth and sixth lenses arranged in that order from left to right; the first lens is made of potassium bromide and has a left and right side radius of 17.545086 and 13.312300 inches; the second, third, fourth and fifth lenses are each made of cesium iodide and have left and right side pairs of radius of (16.358525, 26.276313), (77.852714, −147.328009), (77.710706, −120.597400), (−136.917190, −21.538799) inches respectively; the sixth lens is made of potassium iodide and has a left and right side radius of −26.662185 and −68.563895 inches; the lenses are constructed and located relative to each other such that center lines of each of the lenses are lined up and the



distances traveled in inches along the center line to get from one side of a lens to a next side of a lens starting with the left side of said first lens on to the right side of said sixth lens are 2.841697, 1.291968, 2.395441, 0.955152, 2.917873, 7.462730, 1.750825, 1.042032, 2.487841, 0.133560, and 2.464465; and the total effect will be to focus on a surface with the inherent chromatic and monochromatic aberrations effectively corrected from the middle infrared band through the far infrared band.

4,542,955
DEVICE FOR ILLUMINATING AN ELECTRO-OPTICAL MEDIUM FOR RECORDING HOLOGRAMS IN REAL TIME

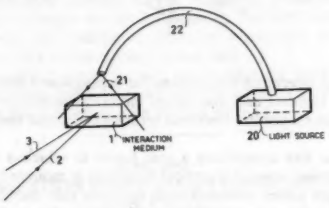
Philippe Graindorge, and Hervé Arditty, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 16, 1983, Ser. No. 504,733

Claims priority, application France, Jun. 18, 1982, 82 10703

Int. Cl.⁴ G01B *9/027;* G02F *1/29;* G03H *1/00*

U.S. Cl. 350—3.63 **9 Claims**



1. A device for illuminating an electro-optical medium for recording holograms in real time, comprising:

a source of coherent light producing an object wave intended to illuminate an object and a reference wave;

an interaction medium, receiving the object wave emerging from the object and the reference wave so that these two waves interfere in this interaction medium to produce interference fringes wherein spatial modulation of light intensity results from the interference fringes induces a spatial modulation of the refractive index of the medium inducing a pattern of strata diffracting a fraction of the reference wave in the form of a wave front in phase with the object wave, said medium being subjected to an electric field perpendicular to the direction of the fringes, and said device comprising in addition a second light source which produces a light beam which is not coherent with

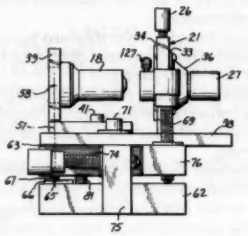
the light coming from the coherent light source, which illuminates the interaction medium uniformly.

4,542,956

FIBER OPTICS TRANSFER SYSTEMS

John T. McCrickerd, Costa Mesa, Calif., assignor to Newport Corporation, Fountain Valley, Calif.

Filed Dec. 30, 1982, Ser. No. 454,902
Int. Cl.⁴ G02B 7/26
U.S. Cl. 350—96.20 **26 Claims**



24. Apparatus for passing laser light into an optical fiber core having a light input face thereacross, comprising in combination:

means for forming a spatial spectrum of light distribution in which noise frequencies are spatially distributed about a central spot of light, including means for focusing the laser light onto a front focus plane of said focusing means;

means for coarsely adjusting the position of the light input face of the core relative to said focus plane for capturing with said core said central spot of light to the exclusion of distributed noise frequencies; and

means connected to the focusing means and the fiber for finely adjusting said central spot of light in position on the light input face of the core so that a maximum of light energy from said spot is transmitted through the input face of the core, including a horizontal first baseplate and a second baseplate located on top of said first baseplate, a single pivot between said first baseplate and said second baseplate, and means for rendering said second baseplate rotatable about said single pivot relative to said first baseplate and tiltable relative to said first baseplate, and means for locating said focusing means and said coarsely adjusting means on top of said second baseplate so that an optical axis of said focusing means extends in parallel to said second baseplate at a distance therefrom for fine adjustment of said central spot of light in position on said light input face of the fiber core by selective rotation of said second baseplate about said single pivot and by tilting the focusing means and the light input face of the core upon tilting of said second baseplate relative to said first baseplate about said single pivot.

4,542,957

PLASTICS OPTICAL FIBERS

Kazuo Ishiwari; Akira Ohmori, both of Ibaraki; Nobuyuki Tomihashi, Takatsuki; Sumiko Yuhara, Settsu; Toshikuni Kaino; Kaname Jinguji, both of Mito, and Shigeo Nara, Mito, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo and Kaikiu Kogyo Co. Ltd., Osaka, both of, Japan

Filed Aug. 11, 1983, Ser. No. 522,260
Claims priority, application Japan, Aug. 13, 1982, 57-139803
Int. Cl.⁴ G02B 5/172
U.S. Cl. 350—96.34 **2 Claims**

1. Plastic optical fibers comprising as a core component a polymer predominantly containing methyl methacrylate and as a cladding component a copolymer lower in the refractive index than the core component, the plastics optical fibers being characterized by performing conjugate spinning with use of the cladding component which is vinylidene fluoride-tetra-

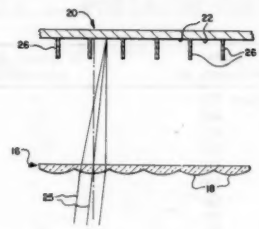
fluoroethylene copolymer having incorporated therein 5 to 50% by weight of a polymer predominantly containing methyl methacrylate.

4,542,958

VARIABLE ASPECT DISPLAY

Clinton J. T. Young, Alexandria, Va., assignor to Vasco, Ltd., Dayton, Ohio

Filed Jan. 13, 1983, Ser. No. 457,607
Int. Cl.⁴ G02B 5/12
U.S. Cl. 350—167 **8 Claims**



1. A variable aspect display, comprising:

a lenticular screen having a series of discrete lens elements;

an object field supported behind said lenticular screen at or near the foci of said lens elements;

said object field being divided into a plurality of lens fields, each said lens field having a pattern and corresponding to one of said lens elements, each said lens field extending across substantially the entire intended viewing angle for its respective one of said lens elements for the intended range of viewing directions for said variable aspect display;

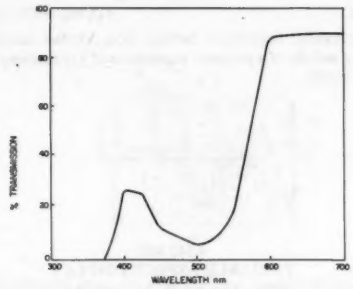
said patterns within said lens fields each being divided into a plurality of display elements selectively visible to a viewer through said lenticular screen as a function of the angular position of the viewer in relation thereto, a unique one of said display elements from one of said patterns forming only a portion of one aspect for said display and cooperating with a unique one of said display elements from each other of said patterns to define the entirety of said aspect; and

said display elements being repeated cyclically within each of said lens fields to provide more than one cycle of displays as the viewer moves through the intended range of viewing angles, and to provide said cyclical display elements for each of said lens elements from its own respective one of said lens fields rather than borrowing from ones of said lens fields corresponding to adjacent ones of said lens elements.

4,542,959
COLOR CORRECTION FILTER AND METHOD OF TAKING UNDERWATER PHOTOGRAPHS THEREWITH

Kirk Kreutzig, 621 E. Benton, Naperville, Ill. 60540

Filed Jul. 25, 1983, Ser. No. 516,579
Int. Cl.[4] G02B 5/22
U.S. Cl. 350—311 11 Claims



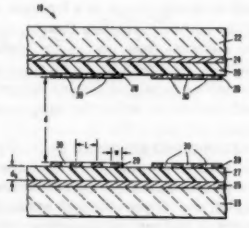
1. A color correction filter for use in underwater photography, comprising, in combination, mounting means for mounting the filter to a camera to be used underwater, and a transparent element secured to the mounting means and passing impinging light wavelengths as follows:

Light wavelength, nm	% incident light transmitted
Below 370	0
400	25
410	27
450	12
470	8
500	4
520	7
550	18
570	50
600	87
700	90.

4,542,960
FRINGE-FIELD SWITCHED STORAGE-EFFECT LIQUID CRYSTAL DISPLAY DEVICES

Kie-Hsiung Yang, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,015
Int. Cl.[4] G02F 1/133
U.S. Cl. 350—336 18 Claims



1. A liquid crystal display device including at least one cell having a memory effect comprising:

first and second arrays of column electrodes spaced from each other in parallel planes;

a liquid crystal material contained between said first and second arrays of column electrodes and having respective boundary layers contacting the inner surfaces of said column electrodes;

first and second arrays of row electrodes respectively disposed in parallel planes in proximity to the outer surfaces of, and extending orthogonally to, said first and second arrays of column electrodes;

a first thin dielectric layer disposed between and isolating said first array of column electrodes from said first array of row electrodes;

a second thin dielectric layer disposed between and isolating said second array of column electrodes from said second array of row electrodes; and

a pair of parallel housing plates for containing said arrays of row and column electrodes and said liquid crystal material therebetween, at least one of said plates being optically transparent;

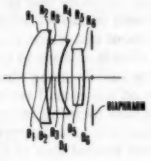
and wherein each column electrode in said first and second arrays of column electrodes is porous such that potentials applied to said row and column electrodes are capable of producing electrical fringe fields at the porous inner surface of each said column electrode tending to retain the directors of said liquid crystal boundary layers normal to said inner surfaces in the regions of said fringe fields;

whereby said memory effect may be achieved by said fringe fields when appropriate potentials are applied to said arrays of row and column electrodes.

4,542,961
TRIPLET TYPE OBJECTIVE

Yasuhisa Sato, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1984, Ser. No. 583,938
Claims priority, application Japan, Mar. 3, 1983, 58-35075; Mar. 3, 1983, 58-35076
Int. Cl.[4] G02B 9/14, 13/18
U.S. Cl. 350—475 5 Claims



1. A triplet type comprising:

(a) a first lens component having a positive refractive power;

(b) a second lens component on the image side of said first lens component having a negative refractive power, one surface of said second lens component being aspheric such that as the height from the optical axis increases, the negative refractive power becomes weaker;

(c) a third lens component on the image side of said second lens component and having a positive refractive power; and

(d) a diaphragm on the image side of said third lens component;

said second lens component satisfying the following conditions:

$$1 \times 10^{-5} < \frac{\Delta Xa}{f} < 10 \times 10^{-5}$$

$$1 \times 10^{-7} < \frac{\Delta Xb}{f} < 10 \times 10^{-7}$$

wherein ΔXa and ΔXb are the axial distances between the spherical surface for determining the focal length of said second lens component and the aspheric surface at a maximum height for the effectiveness of the aspheric surface and at the half of said maximum height respectively with the direction in which the negative refractive power weakens as positive, and f is the focal length of the entire system.

4,542,962

IMAGE-STABILIZED OPTICAL INSTRUMENT, SUCH AS TELESCOPE AND CAMERAS

Rolf Strömberg, Köpenhamnsgatan 14, 163 42 Spånga, Sweden

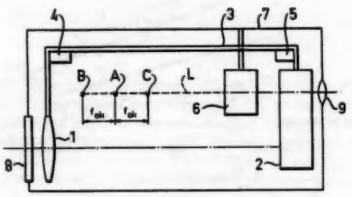
PCT No. PCT/SE82/00222, § 371 Date Feb. 24, 1983, § 102(e) Date Feb. 24, 1983, PCT Pub. No. WO83/00067, PCT Pub. Date Feb. 6, 1983

PCT Filed Jun. 18, 1982, Ser. No. 474,583

Claims priority, application Sweden, Jun. 25, 1981, 8103984

Int. Cl.⁴ G02B *27/64*

U.S. Cl. 350—500 **13 Claims**



1. An image-stabilized optical instrument defining an optical path for the passage of optical rays therethrough, comprising a casing, an objective mounted in said casing in said optical path, a first optical element mounted in said casing in said optical path, said first optical element including at least one plane reflecting surface, a second optical element mounted in said casing in said optical path, said second optical element including at least one plane reflecting surface and being unstabilized and so substantially following the movements of the casing, at least a part of the objective being rigidly connected with the first optical element to form a stabilized unit which is rotatable in relation to the casing around at least one axis.

4,542,963

OPTICAL SYSTEM WITH REFLECTIVE BAFFLES

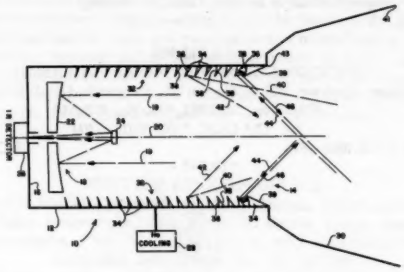
William I. Linlor, Mountain View, Calif., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 28, 1984, Ser. No. 594,134

Int. Cl.⁴ G02B *23/00*

U.S. Cl. 350—537 **10 Claims**

1. An optical system which comprises a tube having an open front end and a back end, image optics mounted in said tube with an optical axis extending lengthwise of said tube, a plurality of electromagnetic radiation reflecting baffles extending around a bore of said tube, said optical axis being free of obstruction from said baffles, at least a first one of said baffles defining a concave curved surface facing toward the back end of said tube, at least a second one of said baffles defining a substantially planar surface facing said concave curved surface, the concave surface of said first baffle and the substantially planar surface of said second baffle coacting to reflect off axis electromagnetic radiation entering said optical system



from the front end of said tube so that the reflected radiation leaves the open front end of said tube.

4,542,964

EYEWEAR WITH TRANSLUCENT SUPERIOR FIELD OF VIEW

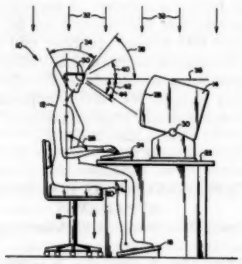
Richard D. Gilson, Columbus, and Edgar D. Young, Hilliard, both of Ohio, assignors to Foggles, Inc., Columbus, Ohio

Division of Ser. No. 338,270, Jan. 11, 1982, Pat. No. 4,470,673. This application Aug. 27, 1984, Ser. No. 644,802

The portion of the term of this patent subsequent to Sep. 11, 2001, has been disclaimed.

Int. Cl.⁴ G02C *7/10*

U.S. Cl. 351—44 **9 Claims**



1. A system for improving visual display terminal operator performance in the presence of overhead environmental illumination comprising:

a work station employing a visual display terminal having a luminescent display surface located a viewing distance from the eye of said operator;

eyewear having a frame portion removably positioned before the said eyes of said operator;

said frame portion having a centrally disposed bridge section and right and left temple pieces extending therefrom;

said frame portion supporting clear optical regions dimensioned for intercepting lines of sight substantially only within the inferior field of view of said eyes of said operator;

said frame portion supporting a translucent region having light diffusing characteristics intercepting and blocking lines of sight directed substantially upwardly from the forwardly looking mid pupillary position of said eyes within the superior field of view thereof;

the extent of translucency of said translucent region being sufficient to substantially reduce the luminence value difference otherwise perceived by said subject between

sad overhead illumination and illumination within said subject's inferior field of view; and

said light diffusing characteristics being sufficient to average out flicker effects and providing a sufficient diffuse luminence effect to avoid a "blinder" feeling.

4,542,965

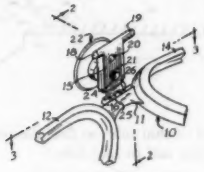
SUCTION CUP MOUNT FOR EYEGLASSES

Sidney Shedrow, 202 E. Gaston St., Savannah, Ga. 31401

Filed Jan. 20, 1983, Ser. No. 459,414

Int. Cl.[4] G02C *7/08, 9/02, 5/04*

U.S. Cl. 351—57 **3 Claims**



1. Eyeglass mounting means for supporting eyeglasses within a protective mask having a face plate, said eyeglasses comprising eyeglass frames including a bridge, a carrier, a hinge adjustably fixing said bridge of said eyeglass frames to said carrier, and releasable attaching means for selectively fixing said carrier to said face plate, the improvement wherein said releasable attaching means includes a suction cup selectively fixable to said face plate, and a stud carried by said suction cup, said carrier defining means for receiving said stud for fixing said carrier to said suction cup, said carrier defining at least one hole therethrough constituting said means for receiving said stud, said stud including external threads, said at least one hole having a diameter of approximately the minor diameter of said threads, said carrier being deformable by entry of said stud into said at least one hole, said at least one hole comprising a plurality of holes vertically distributed along said carrier, said stud being selectively receivable within each hole of said plurality of holes for vertical adjustment of said eyeglasses with respect to said attaching means.

4,542,966

SHOULDER-HAND SUPPORT FOR PHOTOGRAPHIC APPARATUS

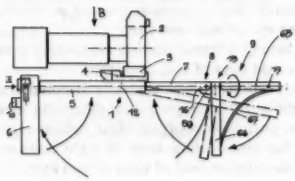
Hermann Knaudt, Drosselweg 24, 85 Nürnberg 30, Fed. Rep. of Germany

Filed Mar. 2, 1984, Ser. No. 585,785

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308509

Int. Cl.[4] G03B *17/00*

U.S. Cl. 354—82 **11 Claims**



1. A shoulder support device for a camera comprising a support arm, camera mount means on said arm for releasably securing a camera thereto, a grip member pivotally secured to said arm adjacent one end thereof, a brace rod member pivotally secured to said arm at the other end thereof, said grip and rod members being disposed to opposite sides of said arm and being foldable about said axis of connection between a stowed position whereat said members lie alongside said arm and an operative position whereat said members extend beyond the ends of said arm, a shoulder brace member connected to the end of said rod remote from the connection of said arm and rod, said shoulder brace member being pivotal relative to said arm about a first axis parallel to the longitudinal axis of said rod and about a second axis perpendicular said longitudinal axis, the combination including key means on said grip and camera actuator means operatively connected between said key means and said camera mount means for actuation of the shutter release and wind mechanisms of a camera on said mount means, said camera actuation means being disposed internally of said grip and said arm.

4,542,967

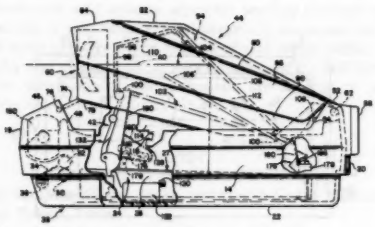
CAMERA ERECTING ASSEMBLY

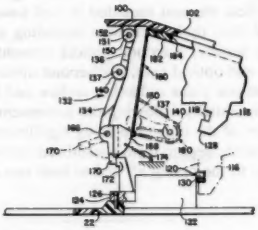
Peter F. Costa, Winthrop, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 22, 1983, Ser. No. 534,822

Int. Cl.[4] G03B *17/04*

U.S. Cl. 354—187 **5 Claims**





1. A folding camera comprising:

a first housing including means defining a film chamber for receiving and locating a film cassette in position for the exposure of a film unit contained therein; a second housing pivotally connected to said first housing for movement between a folded inoperative position and an erected operative position, said second housing including means for directing image bearing rays emanating from a scene being photographed toward said chamber;

a flexible bellows connected to said first and second housings to provide a tunnel within which image bearing rays may travel from said second housing toward said chamber and for excluding other rays from passage from said second housing to said chamber, said bellows including at least one wall; and

an erecting assembly connected to said first and second housings at points exteriorly of said tunnel for movement between an extended position wherein it releasably maintains said second housing in said erected operative position and a collapsed position wherein it permits movement of said second housing into said folded position while

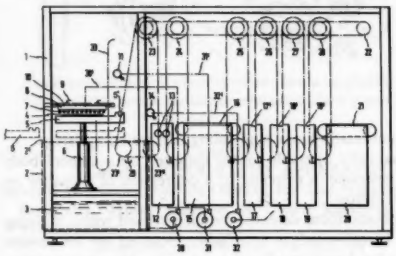
simultaneously engaging and supporting said wall of said bellows as said wall is moved into said tunnel so as to prevent its movement into said chamber.

4,542,968

DEVICE FOR TREATING PHOTO PRINTING PLATES

Fritz Knollmann, Meraner Strasse 9, D-8000 Müchen 90, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 562,972
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1982, 3248411
Int. Cl.[4] G03D *3/10*
U.S. Cl. 354—322 14 Claims



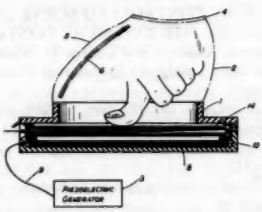
1. An apparatus for treating photo printing plates comprising a table having a horizontal first position for receiving a printing plate, said table having a transverse suspension bar, means for vertically raising said table and said printing plate to a second horizontal position; a washing brush and tray mounted adjacent said table second horizontal position; a continuously moving conveyor having suspension holders for grasping said suspension bars, said conveyor having a path of movement adjacent said printing plate and table, whereby a suspension holder grasps a suspension bar in said table first position; and a plurality of treatment containers positioned along the path of movement of said conveyor whereby said printing plates and said tables may be suspended into each of said containers during movement of said conveyor.

4,542,969

PORTABLE DAYLIGHT ELECTROPHOTOGRAPHY APPARATUS

Yoshiaki Omura, Apt. 8-I 800 Riverside Dr., New York, N.Y. 10023

Filed Sep. 30, 1982, Ser. No. 429,343
Int. Cl.[4] G03B *19/00, 41/00*
U.S. Cl. 354—354 11 Claims



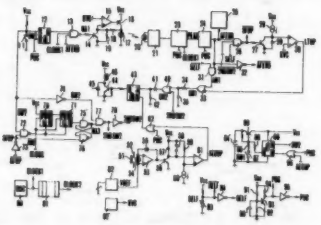
1. A portable device for practicing Kirlian photography, comprising a holder, a film pack having sheet-form members which are each provided with a photosensitive emulsion the film pack being mounted inside said holder, light-tight enclosure means connected to said holder and defining a space on a first side of said film pack for receiving an object under investigation, said space being bounded partly by a top most one of said sheet-form members, whereby said object may be placed in contact with the top most sheet-form member, a foil electrode disposed entirely inside said holder on an opposite side of the film pack from said space, a layer of electrically-insulating material disposed entirely within the holder between the electrode and the film pack, and pulse generator means having two terminals between which high voltage pulses having a high-frequency component are developed in use, one of said terminals being connected to the electrode and the other terminal being electrically isolated from the rest of the device.

4,542,970

SHUTTER RELEASE DEVICE

Ryoichi Suzuki, Kanagawa, and Ryuji Tokuda, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 396,316, Jul. 8, 1982, abandoned. This application Jun. 5, 1984, Ser. No. 617,239
Claims priority, application Japan, Jul. 15, 1981, 56-110516
Int. Cl.[4] G03B *3/10, 17/40*
U.S. Cl. 354—400 12 Claims



1. A shutter release device comprising:
(a) a shutter release switch having a first state and a second state, and rendering a releasing operation to be carried out in said second state;
(b) self-timer mode setting means;
(c) a self-timer circuit arranged to initiate a time measuring operation with change of said shutter release switch from a first state to a second state after the setting of the self-timer mode by said self-timer mode setting means, and upon termination of the time measuring operation, to produce a release signal;
(d) detecting means for electrically detecting that, after the self-timer mode has been set by said self-timer mode setting means, said shutter release switch has been twice changed over from the first state to the second state;
(e) shutter release operation means for carrying out a shutter release operation in response to a shutter release signal; and
(f) a release signal forming circuit for forming a shutter release signal when said detecting means detects the fact that after the self-timer mode has been set by said self-timer mode setting means, said shutter release switch has been twice changed over from the first state to the second state.

4,542,971

AUTOMATIC FOCUSING APPARATUS

Saburo Numata, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Continuation of Ser. No. 421,156, Sep. 22, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,410
Claims priority, application Japan, Jul. 6, 1981, 56-104363; Jul. 6, 1981, 56-104364
Int. Cl.[4] G03B *3/10*
U.S. Cl. 354—403 6 Claims

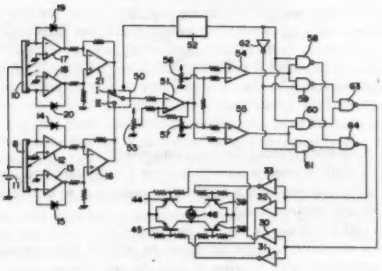
1. Automatic focusing apparatus for use with optical appara-

tus in which a picture-taking lens is moved along its optical axis to focus an image of an object on an image plane, said apparatus comprising:

means for illuminating said object with a spot-like infrared light along said optical axis;

first non-scanning type position sensing means located in a plane substantially conjugated with said image plane for sensing the spot-like infrared light reflected from said object passing through a marginal portion of said picture-taking lens to provide a first signal according to the incident position thereon of said reflected infrared light and comprising a pair of electrodes that are spaced apart by means generating an electric current upon the receipt of infrared light, said generating means producing current which is divided between said electrodes according to a ratio equal to the inverse of the respective differences between the distances between said electrodes and said reflected spot-like infrared light;

second non-scanning type position sensing means located in another plane substantially conjugated with said image plane for sensing the spot-like infrared light reflected from said object passing through another marginal portion of said picture-taking lens to provide a second signal according to the incident position thereon of said reflected infrared light and comprising a pair of electrodes that are spaced apart by means generating an electric current upon the receipt of infrared light, said generating means producing current which is divided between said electrodes according to a ratio equal to the inverse of the respective differences between the distances between said electrodes and said reflected spot-like infrared light;



means for alternately utilizing outputs from said first and second signals to produce an AC signal when said image is in front focus or rear focus, the AC signal for front focus differing from the AC signal for rear focus by 180 degrees, the amplitude of the AC signal being directly proportional to the magnitude of the difference between the front or rear focus and the best focus;

means for detecting the state of focus of said picture-taking lens as a function of the relation between the phases of said AC signal and said utilizing means; and

means for moving said picture-taking lens along its axis in accordance with the output from said detecting means in a direction to reduce said amplitude of the AC signal to zero.

4,542,972

AUTOMATIC FOCUS CONTROLLING CAMERA

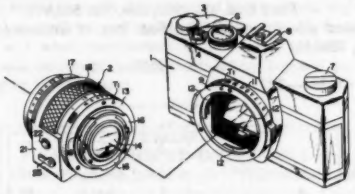
Yukio Nakajima, Kanagawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 520,614

Claims priority, application Japan, Sep. 6, 1982, 57-154884

Int. Cl.⁴ G03B *3/10*

U.S. Cl. 354—402 **7 Claims**



1. An automatic focus controlling camera comprising:

first manually operable means disposed on a camera body and operable in response to a depression of a shutter release button;

an automatic focus detector circuit disposed within a taking lens barrel which is detachably mounted on the camera body for detecting a focus status of an object being photographed;

drive means disposed on the taking lens barrel and responsive to an output from the automatic focus detector circuit for automatically moving a taking lens arranged on said barrel to an in-focus position;

bistable circuit means having an output coupled to the automatic focus detector circuit;

said bistable circuit means having a set input;

second manually operable means disposed on the taking lens barrel and coupled to said bistable circuit means for enabling the automatic focus detector circuit for operation;

a first switching element which is connected in shunt with said second manually operable means and is connected to said set input;

operation signal accepting means disposed on the taking lens barrel for connecting the first manually operable means to the first switching element whenever the taking lens barrel is mounted on the camera body; and

said bistable circuit means actuating said automatic focus detector circuit upon operation of said first manually operable means which applies an operation signal to said set input through said operation signal accepting means and said first switching element.

4,542,973

DYNAMICALLY CONTROLLED SCENE RADIATION LEAKAGE FOR EXPOSURE CONTROL

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 193,892, Oct. 6, 1980, abandoned. This application Dec. 16, 1981, Ser. No. 331,148

Int. Cl.⁴ G03B *7/099*

U.S. Cl. 354—413 **12 Claims**

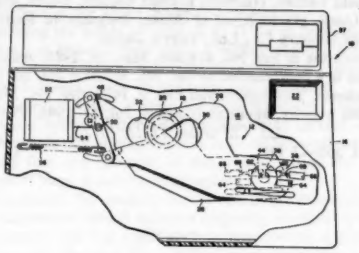
11. A method of exposing image recordable material comprising the steps of:

initiating an exposure interval by directing scene radiation to image recordable material located at a given focal plane;

evaluating a first range of spectral frequencies along a first path during a portion of the exposure interval; and

evaluating a comparatively lesser amount of a second range of spectral frequencies different from the first range along a second path substantially throughout said portion with

the evaluated second range of frequencies comprising a preselected portion of the total scene radiation wherein



said preselected portion is more than a negligible amount of the total scene radiation evaluated during said portion.

4,542,974

FLASH PHOTOGRAPHY APPARATUS

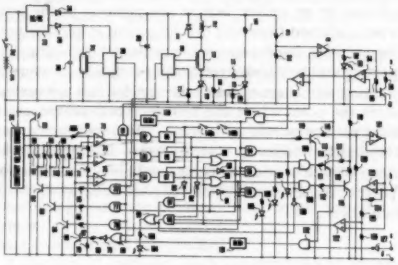
Ryoichi Yoshikawa; Kouichi Ohmori, and Isao Watanabe, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1984, Ser. No. 625,708

Claims priority, application Japan, Jul. 1, 1983, 58-119675; Jul. 11, 1983, 58-125862

Int. Cl.⁴ G03B *15/05*

U.S. Cl. 354—415 **7 Claims**



6. A flash photography apparatus of the type in which an exposure factor is determined with a preliminary flash and then a main flash is produced, comprising:

(a) illumination determining means for determining the illumination of an object by the main flash, and

(b) detection means for generating a warning signal to cause warning means to perform a warning operation when the illumination determined by the illumination determining means changes after the preliminary flash is done.

4,542,975

CAMERA FLASH LIGHT CONTROL CIRCUITRY

Tokuji Ishida, and Hiroshi Hosomizu, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 428,581, Sep. 30, 1982, which is a division of Ser. No. 257,238, Apr. 24, 1981, Pat. No. 4,367,023. This application Feb. 15, 1984, Ser. No. 580,351

Claims priority, application Japan, Apr. 25, 1980, 55-55740; Apr. 25, 1980, 55-55741

Int. Cl.⁴ G03B *15/05*

U.S. Cl. 354—416 **9 Claims**

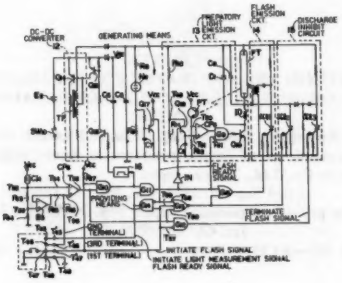
1. In a flash photography system including an electronic flash device adapted to be combined with a camera adapted to transmit first and second signals to an electronic flash device and to receive third and fourth signals therefrom, said third signal informing the camera of the completed preparation for flash light emission, said first signal directing said electronic flash device to initiate flash light emission, said fourth signal directing the camera to initiate light measurement upon flash light emission, and said second signal directing said electronic flash device to terminate flash light emission in accordance with said light measurement, said electronic flash device comprising:

means for emitting flash light;

means for storing electric power for operation of said means for emitting flash light;

means for generating said third signal with the stored electric power exceeding a predetermined level;

a first terminal connectable to the camera for receiving said first signal;



means connected to said first terminal for initiating flash light emission by said flash light emitting means in response to said first signal;

means responsive to the receipt of said first signal at said first terminal for providing the fourth signal;

a second terminal connectable to the camera for transmitting said third signal upon generation thereof by said generating means, and for transmitting said fourth signal in response to the provision thereof by said means for providing;

a third terminal connectable to the camera for receiving said second signal; and

means connected to said third terminal for terminating flash light emission in response to said second signal.

4,542,976

PARTIALLY OPENABLE IMAGE FORMING APPARATUS

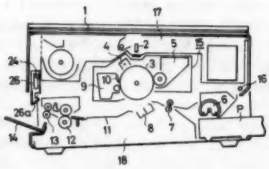
Toshirou Kasamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 488,175

Claims priority, application Japan, May 6, 1982, 57-75896

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 R **10 Claims**



1. An image forming apparatus having:

an upper and a lower structure which are discrete from each other;

an image formation process kit removably held by said upper structure;

first control means for holding and controlling said upper and lower structures in a partly open position smaller than the fully open position of said upper and lower structures to render said image formation process kit removably mountable in said partly open position;

second control means for holding and controlling said upper and lower structures in the fully open position thereof to enable paper jam or the like to be dealt with; and

third control means for holding and controlling said upper and lower structures in the fully closed position thereof.

4,542,977

METHOD AND APPARATUS FOR SEPARATING RECORDING PAPER FROM IMAGE RETAINING MEMBER

Ninichi Kamogawa, Tokyo; Kenji Ueno, and Kazumi Ishii, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1983, Ser. No. 532,586
Claims priority, application Japan, Sep. 20, 1982, 57-164576
Int. Cl.⁴ G03G *21/00*
U.S. Cl. 355—3 CH **6 Claims**

1. A recording paper separating device for separating a recording paper from a moveable image retaining member, the recording paper retaining a visible toner image thereon, which comprises;

a separating electrode means for generating a.c. corona discharge in a spatial distribution relative to the surface of the image retaining member so as to eliminate or reduce electrostatic forces generated between said image retaining member and said recording paper;

said separating electrode means comprising:

an electrically conductive shield having two ends;

an insulator block arranged on each end of said conductive shield;

a high voltage plug connector mounted on one of said insulator blocks;

a tungsten corona discharging wire extending between said plug connector and the other of said insulator blocks and extending in a direction substantially perpendicular to the direction of movement of said image retaining member; and

arc arresters arranged on the upper portion of each of said insulator blocks; and

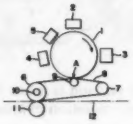
an insulator in the form of a strip arranged in spaced relation with said wire and interposed between the surface of the image retaining member and said wire, said insulator extending between said arc arresting substantially in parallel with said wire, the space between said insulator and said wire being such that the special distribution of corona discharge current generated by said separating electrode is flattened and without peaks which would otherwise be present in the absence of said insulator, so that a greater margin of a recording paper on the moving retaining member is substantially neutralized by the corona discharge for separation from the retaining member.

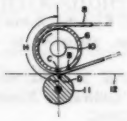
4,542,978

IMAGE REPRODUCING APPARATUS WITH HIGH-SPEED TRANSFER MECHANISM

Noriyoshi Tarumi, Hachioji; Kiyoshi Kimura, Iruma, and Kouichi Gunji, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 478,808, Mar. 25, 1983, abandoned, which is a continuation of Ser. No. 283,812, Jul. 16, 1981, abandoned. This application Feb. 9, 1984, Ser. No. 578,305
Claims priority, application Japan, Jul. 21, 1980, 55-98654
Int. Cl.⁴ G03G *15/16, 15/20*
U.S. Cl. 355—3 TR **12 Claims**





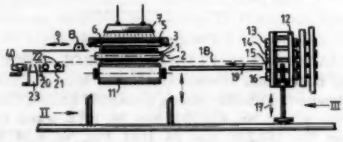
9. In an image reproducing apparatus of the type in which a toner image on a rotatable image retaining member is first transferred to an endless belt at one position of the belt and then retransferred from said belt to a sheet at another position of the belt, the improvement comprising a cylindrical roller supporting said belt at said retransfer position, a pressure roller first urging said sheet against said transfer belt approximately adjacent the point where the belt departs from the outer peripheral surface of said cylindrical roller, and means heating said cylindrical roller to a temperature at which the image carrying surface of said belt is substantially equal to the softening point of the toner at the point of contact between said sheet and said belt.

4,542,979

METHOD AND APPARATUS FOR FORMING A MULTICOLOR PROOF PRINT

Milan Percic, Noord-Brabant, Netherlands, assignor to Coulter Stork Patents B.V., Amsterdam, Netherlands

PCT No. PCT/EP82/00265, § 371 Date Aug. 11, 1983, § 102(e) Date Aug. 11, 1983
PCT Filed Dec. 14, 1982, Ser. No. 527,651
Int. Cl.⁴ G03G *15/01*; G02B *27/17*; G03G *13/22*
U.S. Cl. 355—4 **46 Claims**



16. A method of making multi-color prints from a series of color separation transparencies by electrophotographic imaging and transferring apparatus which comprises:

A. charging the photoconductive coating of an electrophotographic member for a predetermined first period of time,

B. producing from a first transparency a latent image on said

charged coating by selectively exposing the coating to radiant energy,

C. toning the latent image on said coating for a predetermined second period of time with a first toner,

D. transferring the toned image to a receptor,

E. repeating the series of steps A to D for at least another separation transparency using a different toner for said second transparency whereby to achieve a composite multiple toned image on the same said receptor,

F. the repeated series of steps for each separation transparency and resulting transferred image being carried out at such speeds that at least the time interval between the start of the first and the start of the second period for each series of steps is substantially equal.

34. Apparatus for multi-color imaging by electrophotographic techniques which includes disposing an electrophotographic member having a photoconductive coating in position to be charged, charging the coating, producing from a first separation transparency a latent image on said charged coating by selectively exposing the coating to radiant energy, toning the latent image, transferring the toned image to a receptor and repeating the process for at least another of the separation transparencies and another toner but for the same receptor, which comprises:

A. housing means for supporting an electrophotographic member having a photoconductive coating in a first position relative to said housing means to be charged and imaged through a separation transparency to produce a latent image on said coating,

B. means for charging said coating for a predetermined period of time, while the photoconductive coating is in the first position,

C. means for moving the electrophotographic member to a second position relative to said housing means in which its photoconductive coating faces a different aspect than when at said first position,

D. means for toning said latent image while said electrophotographic member is in said second position,

E. means for transferring the toned image from the photoconductive coating to a receptor,

F. means for returning said electrophotographic member from said second to first position to enable a repetition of said charging, imaging, toning and transfer sequence with at least a second separation transparency to apply a second toned image onto the previous image applied to said receptor,

G. said toning means comprising

i. a plurality of carriages, each constructed and arranged to carry and apply a different toner to respective latent images repeatedly formed on said electrophotographic member when said member is in said second position,

ii. means defining a predetermined path for movment of a carriage in a timed cycle to effect said application and

iii. means for bringing a selected one of said carriages to said path exclusive of all other carriages and causing said one carriage to execute said cycle when the latent image to be toned by the toner of said one carriage is at said second position.

4,542,980

APPARATUS FOR FIXING IMAGES

Hatsuo Tajima, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,741

Claims priority, application Japan, Jan. 15, 1981, 56-4244

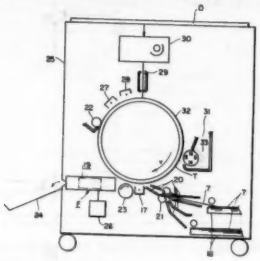
Int. Cl.⁴ G03G *15/20*

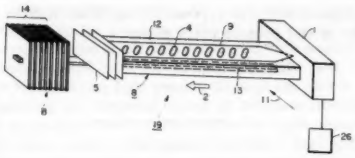
U.S. Cl. 355—14 FU **19 Claims**

1. An image forming apparatus comprising:

image forming means for forming an unfixed image;

high frequency fixing means for fixing the unfixed image on a recording material, said high frequency fixing means including means for producing high frequency radiation, a solid waveguide member made of a solid dielectric material having first and second opposed ends, said first end being connected with said producing means, and said waveguide member extending across a region where the recording material passes, for guiding the high frequency radiation from said producing means, and means for absorbing excess high frequency radiation, said absorbing means being connected to said second end of said solid waveguide member for absorbing said high frequency radiation which passes through said solid waveguide member from said producing means;





wherein said solid dielectric material has on its surface a conductive member forming a surface for concentrating the high frequency radiation to apply to the unfixed image; and

heat absorbing means extending along substantially the whole length of said solid dielectric material of said waveguide member, and cooling means connected to said heat absorbing means for dissipating heat therefrom.

4,542,981

DEGRADATION COMPENSATION OF PHOTORECEPTOR SENSITIVITY FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Shunju Anzai, and Yoshiaki Imanaka, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1984, Ser. No. 587,112

Claims priority, application Japan, Mar. 8, 1983, 58-39465

Int. Cl.⁴ G03G *15/00, 15/06*

U.S. Cl. 355—14 E **4 Claims**

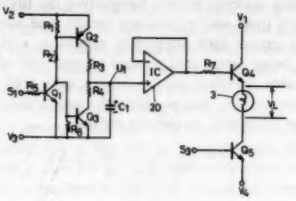
1. An electrophotographic copying machine comprising:

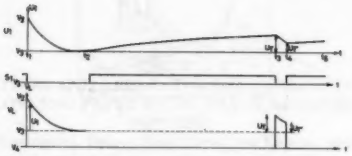
photoreceptor means for forming a latent image thereon;

corona discharge means for providing corona discharging onto said photoreceptor means;

lamp means for emitting light toward said photoreceptor means simultaneously with the discharging of said corona discharge means; and

control means for controlling activation of said lamp means so that an amount of light emitted by said lamp means is





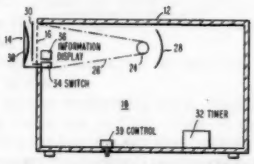
proportional to an exponential degradation in the sensitivity of said photoreceptor means.

4,542,982

LIGHT SENSITIVE VALIDATING IDENTIFICATION BADGE SYSTEM

David J. Haas, Suffern, N.Y., assignor to Temp Badge Security Systems, Inc., Suffern, N.Y.

Continuation of Ser. No. 199,672, Oct. 21, 1980, Pat. No. 4,432,630. This application Feb. 1, 1984, Ser. No. 576,017
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.[4] G03B *17/24, 27/52*
U.S. Cl. 355—40 **9 Claims**



1. A temporary security badge fabrication system comprising:

a badge having at least one surface coated with an ambient light sensitive coating which when exposed to ambient light conditions for a specified predetermined period of time will change to a specified color;

a means for printing information on the badge;

attachment means mounted to the badge for attaching the badge to a wearer and permitting exposure of the badge to ambient light;

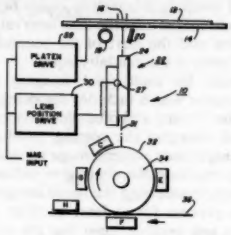
whereby when the badge is attached to the wearer and exposed to ambient light for the specified period of time the badge changes to the specified color.

4,542,983

MULTI-MAGNIFICATION REPRODUCTION DEVICE UTILIZING LINEAR LENS ASSEMBLY

Robert G. Zambelli, Rochester, and David K. Shogren, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1983, Ser. No. 536,938
Int. Cl.[4] G03B *27/32*; G02B *5/16*
U.S. Cl. 355—55 **3 Claims**



1. An imaging system for a multi-magnification electrophotographic reproduction device wherein a document on an object plane is reproduced on a photosensitive image plane at a selected magnification said system comprising:

a first linear lens array positioned between the object and image plane, said first array adapted to transmit an image of said document onto said image plane at a first magnification,

at least a second linear lens array positioned between the object and image planes, said second lens array adapted to transmit an image of said document onto said image plane at a second magnification,

means for providing relative movement between document, lens array assembly and image plane for the selected magnification,

means for illuminating a narrow longitudinal strip of said document, and

means for providing lateral and rotational movement to said lens array assembly so as to position a selected lens array of appropriate magnification into the image transmitting position wherein said means for providing relative movement and said means for providing lateral and rotational movement are simultaneously enabled by a common drive means.

4,542,984

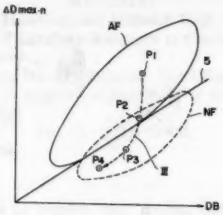
METHOD FOR DETECTING DEFOCUSED PHOTOGRAPHIC IMAGE

Kazuo Shiota; Kenji Suzuki, both of Minami-ashigara, and Takashi Fukui, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 379,989, May 19, 1982, abandoned. This application Feb. 15, 1983, Ser. No. 466,559
Claims priority, application Japan, May 25, 1981, 56-78926
Int. Cl.[4] G03B *27/72*
U.S. Cl. 355—68 **9 Claims**

2. A method for detecting a defocused photographic image comprising the steps of: measuring a transmittivity or a transmission density of an image recorded on a photographic film by consecutively measuring same by scanning with two photometric systems having different measuring areas; calculating measured distribution of differences between two measured values in the transmittivity or the transmission density; obtaining contrast values which have been obtained by totalling local contrasts which have been measured all over said photographic film; detecting a defocused photographic image from a determination of the relationship between said measured distribution of differences and said contrast values; wherein, when

the number of the measurement spots used by said photometric systems is m (wherein m>2), calculating said measured distribution comprises the step of calculating an nth absolute value from a maximum value (wherein $1 \leqq n < m/2$).



4,542,985

IMAGE FORMATION APPARATUS

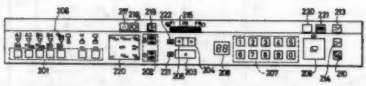
Toshio Honma, Tokyo; Hiroaki Takeda, Kawasaki, and Tadashi Suzuki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1984, Ser. No. 602,755

Claims priority, application Japan, Apr. 26, 1983, 58-73232; Apr. 26, 1983, 58-73233; Apr. 26, 1983, 58-73234; Apr. 26, 1983, 58-73235

Int. Cl.[4] G03B 27/72

U.S. Cl. 355—69 **18 Claims**



1. An image formation apparatus comprising:

(a) image forming means for forming on a recording medium an image corresponding to an original image;

(b) manual setting means for manually setting a density of the image to be formed by said image forming means;

(c) detecting means for detecting an image density of the original image;

(d) density control means for controlling an operation condition of said image forming means, in a manual density adjustment mode, in accordance with the density set by said manual setting means, and in an automatic density adjustment mode, in accordance with the original image density detected by said detecting means; and

(e) selecting means for selecting either one of the manual density adjustment mode or the automatic density adjustment mode,

(f) wherein said density control means sets the operation condition of the image forming means to a specific condition in response to the selection of the automatic density adjustment mode by the selecting means.

4,542,986

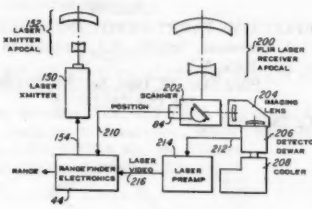
SCANNER POSITION SENSOR FOR AN INTEGRATED LASER/FLIR RANGEFINER

Barry N. Berdanier, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 7, 1983, Ser. No. 472,535

Int. Cl.[3] G01C 3/08

U.S. Cl. 356—5 **8 Claims**



1. In an integrated laser/FLIR rangefinder having a laser and a FLIR including a scanner, a scanner position sensor means for generating scan position sensor signals for charging and firing the laser, said scanner position sensor means comprising light generating means for producing a light beam corresponding to the position of the FLIR's scanner, a light passing reticle means selectively positioned with respect to the line-of-sight optical path for passing said light, and a light detector for detecting light passing through the reticle means and producing an electrical signal in response thereto, and control means operatively connected to the light detector for firing the laser, said control means including a logic gate having a first terminal connected to the light detector for selectively receiving a light indicating pulse.

4,542,987

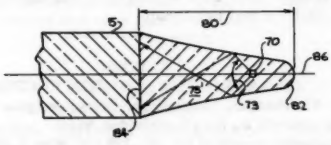
TEMPERATURE-SENSITIVE OPTRODE

Tomas B. Hirschfeld, Livermore, Calif., assignor to Regents of the University of California, Berkeley, Calif.

Filed Mar. 8, 1983, Ser. No. 473,306

Int. Cl.[4] G01J 5/08; G01N 21/64

U.S. Cl. 356—44 **22 Claims**



1. A method for sensing temperature and for generating optical signals related to said temperature, the method comprising the steps of:

(a) providing a fiber optic through which at least one light beam from at least one associated light source is transmitted from a first end of the fiber optic to a second end of the fiber optic;

(b) providing an integral fluorescent solid illuminated by at least one light beam from the one or more associated light sources, the integral fluorescent solid further having a shape which is radially symmetric about a longitudinal axis and having a surface which is tapered along the longitudinal axis from a proximal end to a distal end, the proximal end having a diameter substantially the same as the diameter of the core of the fiber optic, and the proximal end being attached to the second end of the fiber optic such that the longitudinal axis of the integral fluorescent solid is substantially coaxial to the longitudinal axis of the fiber optic;

(c) sensing fluorescence produced by the integral fluorescent solid and collected and transmitted by the same fiber optic used to transmit light beams from the one or more associated light sources; and

(d) determining temperature from a predetermined fluorescence-versus-temperature relationship for the integral fluorescent solid.

4,542,988

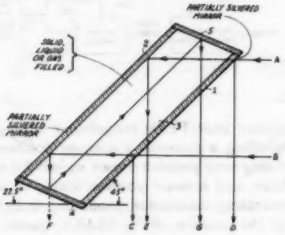
REFLECTIVE FABRY-PEROT INTERFEROMETER

Robert J. Kraushaar, Tenafly, N.J., assignor to ITT Corporation, New York, N.Y.

Filed Mar. 22, 1984, Ser. No. 592,050

Int. Cl.⁴ G01J *3/26*

U.S. Cl. 356—352 **18 Claims**



1. An improved reflective Fabry-Perot resonant cavity comprising:

a first mirror partially transparent disposed at a first predetermined angle with respect to a given axis;

a second mirror partially transparent spaced from and parallel to said first mirror, said first and second mirrors enabling reflection of light therebetween to produce a light beam emanating from one of said first and second mirrors;

a third mirror disposed at one end of said first and second mirrors at a second predetermined angle with respect to a line parallel to said given axis; and

a fourth mirror disposed at the other end of said first and second mirrors parallel to said third mirror, said third and fourth mirrors reflecting light attempting to escape from between said ends of said first and second mirrors to reinforce said light beam.

4,542,989

APPARATUS FOR POSITION ENCODING

Paul W. Remijan, Southbridge, Mass., assignor to Randwal Instrument Co., Inc., Southbridge, Mass.

Continuation-in-part of Ser. No. 239,524, Mar. 2, 1981, Pat. No. 4,395,124, which is a division of Ser. No. 863,948, Dec. 23, 1977, Pat. No. 4,265,534. This application Feb. 5, 1982, Ser. No. 346,015

The portion of the term of this patent subsequent to Jul. 26, 2000, has been disclaimed.

Int. Cl.⁴ G01B *9/00*

U.S. Cl. 356—373 **14 Claims**

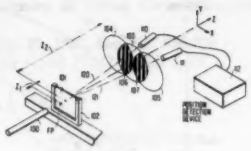
1. Apparatus for indicating the position of a movable element along a motion axis, said apparatus comprising:

A. source means for producing a spatially coherent light at a focal point along an axis that is normal to the motion axis,

B. holographically recorded grating means for producing a first diffraction and a second diffraction of equal strengths and which overlap and the absolute values of whose order numbers are different thereby to produce a high contrast, low noise interference pattern in the area of overlap,

C. detection means positioned in the area of overlap for producing signals dependent upon the interference pattern that impinges said detection means, and

D. motion means for producing relative movement of said grating means and said detection means thereby to move



the interference pattern with respect to said detection means.

4,542,990

HYDRAULIC APPARATUS FOR DRIVING ONE OR MORE HYDRAULIC EQUIPMENT DEVICES, MOUNTED ON A SEMI-TRAILER, BY MEANS OF THE SYSTEM MOTORIZING THE SEMI-TRAILER

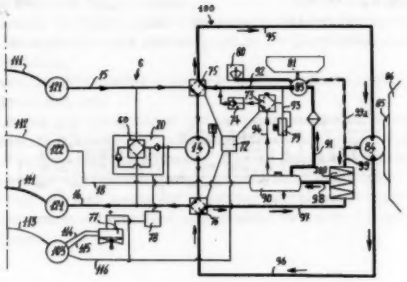
Jean-Claude Fouquet, 4 Rue des Alouettes, 91 540 Mennecy, France

Filed Jul. 21, 1983, Ser. No. 515,892

Claims priority, application France, Jul. 28, 1982, 82 13165

Int. Cl.⁴ B28C *5/20, 5/42*

U.S. Cl. 366—61 **4 Claims**



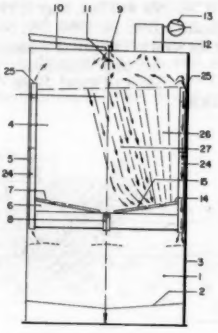
1. In a hydraulic apparatus for driving at least one device mounted on a semi-trailer which has an axle and which is hitched to a tractor having an engine provided with a gear box and a power take-off, said hydraulic apparatus being of the type comprising a hydrostatic system providing mechanical transmission between said take-off and said axle of said semi-trailer when the tractor is moving, said hydrostatic system comprising a variable hydraulic pump connected to said take-off and a hydraulic motor supplied with fluid by said pump and drivingly connected to said axle, and a hydraulic circuit for driving said device and including an auxiliary motor operated by an auxiliary pump, the improvement comprising:

control means, operatively connected to said hydrostatic system and to said hydraulic circuit, for, when the tractor is moving, causing said device to be driven solely by said hydraulic circuit while said axle is driven by said hydrostatic system, and for, when the tractor is stationary, causing said device to be driven solely by said hydrostatic system.

4,542,991
MIXING SILO FOR PNEUMATICALLY HOMOGENIZING FINE-GRAINED OR DUST-LIKE MATERIAL

Werner Kraüss, Hamburg, and Heinrich Vogt, Buxtehude, both of Fed. Rep. of Germany, assignors to Claudius Peters, Fed. Rep. of Germany

Filed Dec. 8, 1983, Ser. No. 559,421
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245542
Int. Cl.⁴ B01F *13/02*
U.S. Cl. 366—106 **6 Claims**

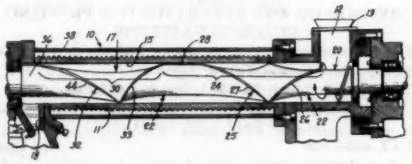


1. In a mixing silo for pneumatically homogenizing fine-grained material located in the bottom silo part, the improvement in the bottom area of the upper silo part comprising, groups of aeration zones (14, 15), said zones being weakly aeratable zones and heavily aeratable means wherein the weakly aeratable zones (15) are separated by a star pattern from the heavily aeratable zones (14); which are partially limited by the outer limit of wall (15), said heavily aerated zone (14) having near silo wall (5) an overflow pipe (24) containing an opening (25) located at the top of overflow pipe (24).

4,542,992
CONTINUOUS MIXER

Gary T. Markhart, Hamden, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Oct. 17, 1984, Ser. No. 661,590
Int. Cl.⁴ B01F *7/08*
U.S. Cl. 366—300 **5 Claims**

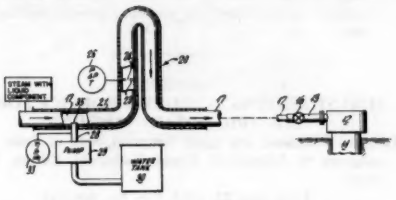


1. Mixing apparatus comprising a body having an inlet opening for admitting materials to be mixed into one end of a pair of parallel cylindrical chambers and having an outlet opening at the opposite end of the chambers for discharging material mixed in the chambers, and elongate rotors mounted for rotation in the chambers; each rotor having a screw-like feed section communicating with the inlet opening, a lobed section for mixing the material fed by the feed section and a discharge section communicating with the outlet; the mixing section of each rotor having a first mixing portion comprising lobes equally spaced about the rotor and extending helically to advance the material a short distance until the helices of the lobes are reversed a longer distance whereby the material is pressurized to force trapped gases back toward the inlet, the first mixing portion of the lobes being followed by a second mixing portion having an increased number of lobes equally spaced about the rotor and arranged in a short section of advancing helices followed by a longer section of reversed helices for increasing the mixing and shearing action on the material, the second portion of the mixing section being merged into a final straight lobed discharge section for impelling the mixed material through the discharge outlet.

4,542,993
METHOD OF MEASURING QUALITY OF STEAM IN A FLOW FINE

Donald S. Mims, Houston, Tex., and Terry L. Frazier, Paso Robles, Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,844
Int. Cl.⁴ G01K *17/06*; G01N *25/60*
U.S. Cl. 374—42 **7 Claims**



1. Method of measuring the quality of a gaseous fluid mixture flowing from a source thereof and having an unknown quantity of liquid component, comprising the steps of:
passing said fluid mixture through an orifice,
measuring the pressure, the differential pressure across said orifice and the temperature at said orifice of said fluid mixture,
injecting a known quantity of said liquid component, at a known temperature and pressure into said fluid mixture up stream of said orifice, and
measuring the pressure, the differential pressure across said orifice and the temperature at said orifice again after said step of injecting, whereby said quality may be calculated by solving simultaneous equations derived from said measurements before and after said liquid component injection.

4,542,994
FLUID BEARINGS

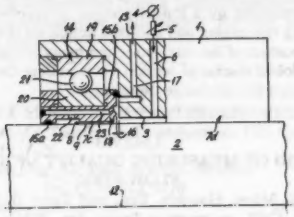
Mohamed E. Mohsin, Alkrington, England, assignor to National Research Development Corporation, London, England

Filed Nov. 22, 1983, Ser. No. 554,393
Claims priority, application United Kingdom, Nov. 24, 1982, 8233462
Int. Cl.⁴ F16C *21/00, 32/06*
U.S. Cl. 384—101 **6 Claims**

1. A fluid bearing comprising:
first and second bearing members, defining between them a space for fluid and adapted in use to move relative to and out of contact with each other under a load tending to bring them into contact;
means formed in one of said bearing members to connect said space to a source of fluid under pressure;
at least one third bearing member, supported from said first bearing member and presenting a first bearing surface;
at least one second bearing surface presented by said second bearing member and confronting said first bearing surface so that such said first and second bearing surfaces define between them a clearance by which said fluid may escape from said space, and in so doing will exert hydrostatic separating force on said first and second bearing surfaces

and so resist the said tendency of said load to bring them into said contact;

an auxiliary bearing supporting any such said third bearing



member from said first bearing member, whereby any such said first bearing surface is capable of movement relative to both said first and said second bearing members.

4,542,995

THRUST BEARING SUPPORTING DEVICE FOR AN ELECTRIC ROTARY MACHINE

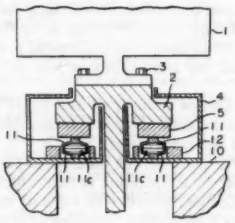
Kazunori Shibasaki, and Kenji Sawatani, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1983, Ser. No. 506,615

Claims priority, application Japan, Jun. 29, 1982, 57-99717[U]

Int. Cl.⁴ F16C *27/08, 17/06*

U.S. Cl. 384—224 **8 Claims**



1. A thrust bearing supporting device for an electric rotary machine, said device comprising:

(a) a bearing vessel;

(b) a plurality of thrust bearings disposed in said bearing vessel in position to support the shaft of an electric rotary machine; and

(c) a plurality of supporting pieces disposed in said bearing vessel, at least one of said supporting pieces being disposed between each of said thrust bearings and an inner wall of said bearing vessel so as to transmit the thrusting force of the electric rotary machine to the inner wall of said bearing vessel, each of said plurality of supporting pieces being symmetric about an axis perpendicular to the associated one of said thrust bearings and comprising:

(i) a first member having a cylindrical boss having a first flat, circular working surface bearing against the associated one of said thrust bearings, a hollow conical portion depending directly from said cylindrical boss, and a hollow cylindrical portion depending directly from said hollow conical portion, said hollow cylindrical portion terminating in a first flat, annular working surface, and;

(ii) a second member having a cylindrical boss having a second flat, circular working surface bearing against the inner wall of said bearing vessel, a hollow conical portion depending directly from said cylindrical boss, and a hollow cylindrical portion depending directly from said hollow conical portion, said hollow cylindrical portion terminating in a second flat, annular working surface,

(iii) the first flat, annular working surface on the hollow cylindrical portion of said first member bearing against the second flat, annular working surface on the hollow cylindrical portion of said second member.

4,542,996

CENTER BEARING ASSEMBLY

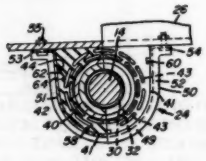
Ronald N. Brissette, and Richard L. Kumbier, both of Medina, Ohio, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 492,766, May 9, 1983, abandoned. This application Dec. 24, 1984, Ser. No. 685,580

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

Int. Cl.⁴ F16C *27/06*

U.S. Cl. 384—536 **3 Claims**



1. A rotary bearing for a vehicle drive shaft comprising a bracket extending partly around said shaft and having a pair of spaced legs with each said leg terminating in means for securing said bracket to a fixed support, said bracket having an inner surface of substantial axial width;

a resilient block having an aperture extending axially therethrough and an outer peripheral surface substantially complimentary to and in abutment with the periphery of said inner surface;

at least one notch in said outer peripheral surface opposite one leg of said bracket;

an anti-friction bearing seated in said resilient block aperture;

means preventing axial movement of said resilient block relative to said bracket; and

an element extending inward from said one leg of said bracket and received within said notch to secure said resilient block between said bracket legs independently of other elements.

4,542,997

METHOD OF AND APPARATUS FOR PRINTING COLORED PATTERNS

Kelichi Matsushima, Yokohama, Japan, assignor to Aimor Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,976

Claims priority, application Japan, Nov. 30, 1983, 58-226254

Int. Cl.⁴ B41J *3/02;* **G01D** *15/10*

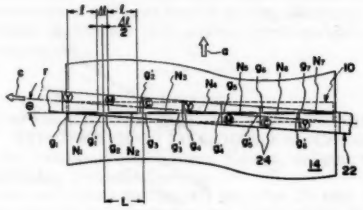
U.S. Cl. 400—120 **13 Claims**

1. A method of printing dots of at least two different colors including first and second colors on a record sheet with use of a printing head having a multiplicity of heater elements which are arranged in an array extending along a substantially straight print line and which are operative to produce heat independently of one another when actuated and an elongated heat-sensitive ink ribbon extending between the record sheet and the array of said heater elements and having a series of recurrent colored sections which are contiguous to one another and which are inked in said colors, said heater elements comprising a succession of groups each having a predetermined number of successive subgroups each consisting of a predetermined number of heater elements and forming a zone having a predetermined length, the colored sections of said

first and second colors occurring, lengthwise of the ribbon, successively and recurrently with a unit series including one colored section of the first color and one colored section of the second color, all the colored sections of the ink ribbon having a predetermined length, the method having a succession of line forming cycles each for forming a single line of dots in at least one of said different colors on the record sheet, each of the line forming cycles consisting of a predetermined number of dot printing steps each comprising

driving the record sheet to advance a predetermined distance across said print line in a direction substantially perpendicular to the print line during each of said line forming cycles;

driving said ink ribbon to travel a predetermined distance with respect to said printing head in a predetermined direction angled to the direction of travel of the record sheet during each dot printing step, said predetermined distance of travel of the ink ribbon being substantially equal to said predetermined length of said zone and being



smaller than said predetermined length of said colored sections of the ink ribbon;

on the basis of control signals supplied from an external source, selecting out of said heater elements of the printing head the heater elements to be actuated to generate heat during each dot printing step; and

actuating the selected heater elements for producing dots of at least one of said colors on said ink ribbon during each dot printing step,

wherein the heater elements to be actuated to generate heat during each dot printing step are selected by selecting one of the subgroups of each of said groups and selecting particular heater elements out of the heater elements of the non-selected subgroups during each dot printing step, and wherein said predetermined distance of travel of the ink ribbon is selected so that every adjacent two of the colored sections of the ink ribbon have trailing and leading marginal areas, respectively, which are located substantially in registry with the selected one of said subgroups during each dot printing step.

4,542,998

CHARACTER SET PRINTING MEANS UTILIZING ROLLING PRESSURE CONTACT FOR PRINTING

Miroslav S. Osmera; Van-Minh Huynh, and Trevor A. Calnek, all of Waterloo, Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 31, 1983, Ser. No. 528,029
Int. Cl.⁴ B41J *1/20*
U.S. Cl. 400—139 **15 Claims**

1. A printer for recording data on a medium comprising:

drum means rotatable about its longitudinal axis and having a printing position along a line on its surface defined by an intersection with the surface of a plane perpendicular to said axis;

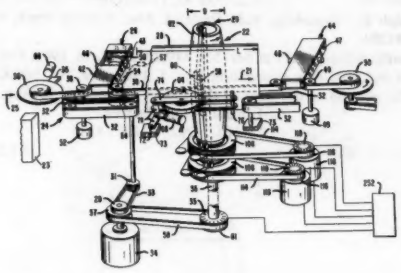
drive means for driving said drum means in rotational movement around its longitudinal axis;

rotatable roller means positioned adjacent said drum means at said printing position and cooperating with said drum means to effect rolling contact pressure printing;

a plurality of character sets mounted for movement on the outer surface of said drum means in either of two opposite directions, each character set comprising a plurality of individual character elements serially connected to each other;

positioning means for moving each character set individually as the drum means rotates to place a predetermined character of each set at the printing position of the drum means, said positioning means for each character set including a cable which is connected to each character set, a pulley to which the cable is connected, and a positioning motor to drive each pulley; and

means for controlling the operation of the positioning means whereby selected characters of each of the character sets



are located at the drum means printing position to cooperate with said roller means to effect continuous printing as the drum means rotates,

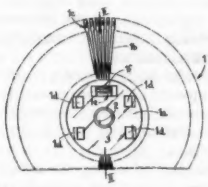
said means for controlling also including first velocity detecting means coupled to the drive means and second velocity detecting means coupled to the positioning motor, and control means coupled to the first and second velocity detecting means for controlling the relative speeds of the positioning motor and the drive means, whereby movement of the character sets with respect to the drum means is accomplished by changing the relative speeds of the positioning motors with respect to the drive means.

4,542,999

REMOVABLE PRINTING DISC COUPLING FOR PRINTING MACHINE

Eric Bauer, Neuchatel, and Blaise Moulin, Corcelles, both of Switzerland, assignors to Caracteres S.A., Neuchatel, Switzerland

Filed Apr. 1, 1983, Ser. No. 481,289
Claims priority, application Switzerland, Apr. 5, 1982, 2070/82
Int. Cl.⁴ B41J *1/30*
U.S. Cl. 400—175 **7 Claims**



1. Coupling means for removably securing a printing disc on the motor drive shaft of a printing machine, including a bracket secured to the drive shaft and having a generally planar face which receives the disc engaged thereon during the course of

a radial displacement relative to the drive shaft, said coupling means comprising clamp means carried by one of the disc and bracket adapted to be coupled to the other of the disc and bracket, a resilient locking member formed on one of the disc and bracket and capable of radial movement relative thereto and recess means formed on the other of said disc and bracket for receipt of said locking member therein, at least one of the said locking member and recess means having converging lateral faces to enable the engagement of the locking member in the recess means to prevent angular movement of the disc on the bracket, said disc having a central hole and a plug slidably mounted through said central hole.

4,543,000

LATCHING ACTUATOR

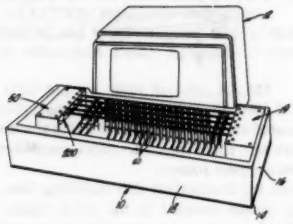
Ralph D. Hasenbalg, 8635 Rudnick Ave., Canoga Park, Calif. 91304

Continuation-in-part of Ser. No. 310,850, Oct. 13, 1981, Pat. No. 4,441,833. This application Dec. 1, 1983, Ser. No. 556,836

The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.

Int. Cl.[4] B41J *23/22*; F15B *15/26*

U.S. Cl. 400—180 **6 Claims**



1. A latching fluid actuator for testing the action of keys of a keyboard comprising:

a cylinder closed at one end and a piston member sealably carried within the cylinder, the piston member including a piston rod, the rod at its one end being arranged to move downwardly to contact a key to be tested, and engagement means,

first fluid inlet means for providing fluid communication through the cylinder closed end,

a latch element having a first member and a second member disposed on opposite sides of the piston rod and a third member interconnecting the first and second members,

a fluid responsive diaphragm member acting against one of the first or second members of the latch element,

second fluid inlet means for providing fluid communication to the fluid responsive member, said second fluid inlet means providing a fluid communication independent of the fluid communication to the first fluid inlet means,

spring means for applying biasing force against the other of the first or second members of the latch element, the second member being adapted to engage the piston member engagement means, the engagement means being for receiving the second member to prevent piston member displacement, and

the cylinder being free of a return spring member such that the upward action of a normally operative key effectively returns the piston rod upwardly to a position where the second member is permitted to engage the engagement means.

6. A method of testing the action of a key on a keyboard comprising pressurizing a latch release fluid connector to unlatch a piston rod means; pressurizing a drive fluid connection to urge said piston rod means downwardly and the key downwardly; measuring a first electrical output from the key; depressurizing the fluid connection to allow the key to move upwardly and urge the piston rod upwardly; depressurizing a latch release fluid connection to attempt relatching of the piston rod means; repressurizing the drive fluid connection to attempt to urge the piston rod means downwardly; measuring the second output electrical signal from the key; and determining whether there is any difference in the first and second electrical outputs, a difference being indicative of return of the key to its substantially fully raised position and the piston rod means to its latched position.

4,543,001

SERIAL PRINTER WITH DOT MATRIX TYPE PRINT HEAD

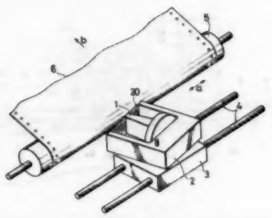
Hideyo Tanaka, Seto, and Mineo Harada, Owariasahi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 3, 1983, Ser. No. 463,653

Claims priority, application Japan, Feb. 16, 1982, 57-23257

Int. Cl.[4] B41J *33/04, 35/14*

U.S. Cl. 400—212 **12 Claims**



1. A serial printer comprising a dot type print head means including a plurality of individual printing means adapted to be selectively operated to print information on a medium, said individual printing means being arranged on the print head in a plurality of individual groups corresponding to a width of a print line so as to enable a simultaneous printing of a plurality of print lines, carrier means facing the medium and mounted for displacement in a direction of the print line for carrying the print head means, a ribbon means including a plurality of individual tracks respectively associated with the individual groups of printing means so as to enable a printing of the information by the respective printing means, means for mounting the ribbon means on said carrier means, and means for adjusting a position of the ribbon means with respect to the print head means to change the association of the tracks of the ribbon means with respect to the individual groups of printing means by changing an angle between a direction along a length of the ribbon means and a direction of the print line, and wherein each of said individual groups of printing means are inclined at a predetermined acute angle with respect to a moving direction of said carrier means.

4,543,002

MULTICOLOR PRINTING

John R. Bittner; Ralph S. Billing, both of Waynesboro, and Robert T. Stewart, Jr., Verona, all of Va., assignors to Genicom Corporation, Waynesboro, Va.

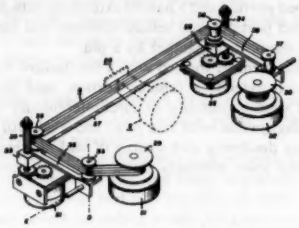
Filed Jun. 16, 1983, Ser. No. 504,959

Int. Cl.[4] B41J *35/14, 35/16, 33/34*

U.S. Cl. 400—212 **5 Claims**

3. An arrangement for printing symbols on a record medium at selected column locations along a print line in a combination of desired colors corresponding to parallel bands of colored ribbon positioned along the print line in front of a print head comprising a ribbon lift mechanism, a source of information, a microprocessor responsive to said information to produce color data signals, means responsive to said color data signals to provide stepping pulses, means for suspending said ribbon from opposite ends of said print line, a bail suspended between

opposite ends of said print line, a ribbon shift shutter constrained for movement in a predetermined vertical plane and coupled to said bail, means for moving said suspended ribbon in front of said print head, means to move the ribbon within



said plane to present a desired color band of said ribbon to said print line comprising incrementally rotatable means located at opposite ends of said print line for moving said bail to desired elevations in response to a predetermined multiple of said stepping pulses.

4,543,003

PAPER ALIGNMENT DEVICE FOR A PRINTER, TYPEWRITER OR LIKE OFFICE MACHINE

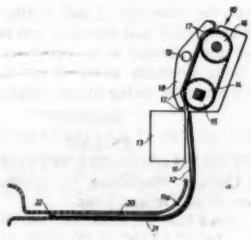
Leif H. Andersson, Blåmesvägen, Sweden, assignor to Facit Aktiebolag, Atvidaberg, Sweden

PCT No. PCT/SE83/00071, § 371 Date Oct. 27, 1983, § 102(e) Date Oct. 27, 1983, PCT Pub. No. WO83/03076, PCT Pub. Date Sep. 15, 1983

PCT Filed Mar. 4, 1983, Ser. No. 556,241

Int. Cl.⁴ B41J *13/28*

U.S. Cl. 400—632 **8 Claims**



1. Printing apparatus comprising a printing head, bidirectional friction feed means located upstream of said printing head, said bidirectional feed means serving as a means for feeding sheet material in a first direction to said printing head and therepast and for subsequently feeding said sheet material in a second direction, opposite to said first direction, past said printing head, said sheet material being printed as it is moved past said print head in said second direction, means to halt said feed means between reversal of feed direction, said sheet material having a length L, alignment means located downstream of said printing head for engaging said sheet material to align said sheet material, said alignment means being located at a distance D from said bidirectional friction feed means measured along the path of travel of said sheet material, said distance D being slightly less than said length L, the difference in said length L and said distance D constituting means to cause said sheet to slightly buckle subsequent to one end of said sheet engaging said alignment means and immediately prior to the other end of said sheet being disengaged from said bidirectional feed means at the termination of movement in said first direction, said buckling causing said other end of said sheet to be presented in an aligned condition to said bidirectional feed means so that when said bidirectional feed means is actuated in the second direction after being halted, said sheet is fed, properly aligned, to said printing head.

4,543,004

PRINTER HAVING AUTOMATIC PAPER POSITIONING MEANS

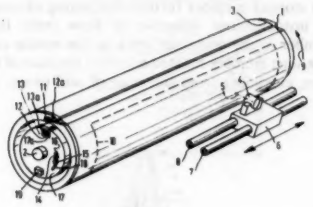
Klaus Brandenburg, Freudenberg, and Wendelin Weber, Siegen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 6, 1984, Ser. No. 568,857

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1983, 3300458

Int. Cl.⁴ B41F *21/04*; B41J *11/04*

U.S. Cl. 400—649 **35 Claims**



1. A device for printing a sheet-like record carrier comprising a cylindrical drum which is rotatable about its longitudinal axis and to which clamping means are secured which are rotatable about an axis extending parallel to the drum axis and which upon rotation of the drum in the printing direction of rotation hold the carrier and release the carrier upon rotation of said drum in the opposite direction, for which purpose the clamping means are in engagement with control elements and with guiding means for guiding the sheet-like record carrier on said drum, said drum having a slot dimensioned for receiving the carrier which extends into the circumference of said drum, said device including clamping means having first and second ends, said slot being dimensioned and configured for engagement with said first end of said clamping means, said device including a disk, said second end of said clamping means engaging the circumference of said disc, said disc being rotatable about the axis of said drum and with respect to said drum and which carries on its outer side a first stopper element which follows its rotation and which resiliently cooperates with a second fixed stopper element secured to a housing of the device in such a manner that upon rotation of the drum in the printing direction of rotation one of said stopper elements slips over the other, and upon rotation of said drum in the opposite direction said stopper elements preventing rotation of said disc, said device including a tensile spring which is arranged between said disk and said drum, said tensile spring being stretched when said drum is rotated in the opposite direction.

4,543,005

CONTAINER FOR INSTANTANEOUS ADHESIVE HAVING MEANS TO PROTECT BIAS SPRING

Yasuyuki Kuboshima, Tokyo, Japan, assignor to Florex Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1983, Ser. No. 557,598

Claims priority, application Japan, Dec. 14, 1982, 57-217736

Int. Cl.⁴ B43K *1/06, 1/10*; B05C *17/00*

U.S. Cl. 401—260 **7 Claims**

1. A container for an instantaneous adhesive comprising:

a. a container body having an internal instantaneous adhesive containing chamber therein which is open at the forward end of the container body;

b. a nozzle casing fixedly inserted into the open end of said container body such that the base of the nozzle casing

extends into the container body and the forward end of the nozzle casing forms the tip of the container;

c. said nozzle casing comprising an inner wall and an outer wall;

d. said nozzle casing containing an opening at its tip;

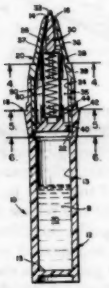
e. a nozzle assembly fixedly inserted into said nozzle casing;

f. said nozzle assembly further comprising a nozzle valve whose tip is retractably inserted into said opening in said nozzle casing, a center projection member located at the base of the nozzle valve and extending transversely thereto, a stopper member located adjacent the lowermost portion of said nozzle casing, and a metallic spring interposed between the center projection member and the stopper member;

g. the edge of said center projection member abutting the internal wall of said nozzle casing when said nozzle valve is in the closed position;

h. said stopper member further containing channels to permit instantaneous adhesive to flow from the internal chamber in the container body to the nozzle casing;

i. a first skirt member located adjacent the base of said nozzle valve, extending from the edge of said center projection



member, and extending away from the top of the nozzle valve so as to enclose the upper portion of said metallic spring;

j. said first skirt member further containing a pair of oppositely disposed slits;

k. said stopper member containing a second skirt member located above the stopper member and extending toward said first skirt member so as to enclose the lower portion of said metallic spring;

l. said second skirt member containing a pair of oppositely disposed slits;

m. a gap located between said first skirt member and said second skirt member;

n. sealing means used to separate said metallic spring from the interior surrounding space inside the nozzle casing and to prevent the chemical interaction between the metallic spring and the instantaneous adhesive; and

o. said sealing means comprising a flexible bag surrounding and hermetically sealing said metallic spring and affixed at its ends to a respective first skirt member and second skirt member at the location of the oppositely disposed slits in each skirt member.

4,543,006

FOLDABLE MULTI-POSITION LADDER JOINT

Chien-Yuan Wang, No. 17, Alley 6, La. 24, Pa Te Rd., Sec. 4, Taipei, Taiwan

Filed Nov. 16, 1984, Ser. No. 672,201

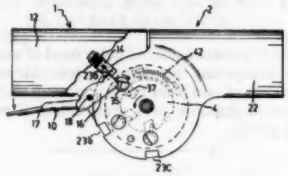
Int. Cl.[4] F16C *11/00;* **E05D** *11/10;* **E06C** *7/50*

U.S. Cl. 403—93 **2 Claims**

1. A foldable multi-position ladder joint comprising:

a first joint member formed with a disk-shaped portion composed of a pair of spaced-apart, opposed circular disks from which extends a flat tubular portion having in opposite side thereof two slots through which is slidably supported a spring-biased pawl operable by an operating lever pivotally connected to said tubular portion, said operating lever being composed of a forked release element received within the disk-shaped portion and a handle extending outwardly of the disk-shaped portion, said release element and handle being pivotally connected together by a pin;

a second joint member formed with a flat, hollow locking disk from which extends a tubular portion, said locking disk provided with a plurality of circumferentially distributed notches engageable with said pawl and a control means for controlling disclosing and closing of said notches, said first and second joint members being pivotally connected to-



gether by a common axial bolt passing through the centers of the disk-shaped portion of the first joint member and the locking disk of the second joint member which is concentrically disposed between the disks of said disk-shaped portion;

and improvements characterized in that one side of the locking disk of the second joint member is provided between the corresponding notches and the axial bolt with a corresponding plurality of protruding cams each having an axial shaft, each cam having an outer semicircular surface and an inner flat surface, the shafts of said cams having their projected portions on the other side of said locking disk formed with extended arms, each said extended arm being received in a respective notch formed in the periphery of a ratchet, said ratchet being pivotally mounted on the axial bolt and hooked by a tension spring to said locking disk.

4,543,007

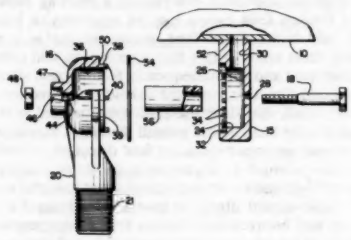
ADJUSTABLE LUMINAIRE SUPPORT KNUCKLE

Honesto D. Quiogue, Blacksburg, Va., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Nov. 17, 1983, Ser. No. 552,621

Int. Cl.[4] F16C *11/00;* **F16L** *27/00*

U.S. Cl. 403—97 **13 Claims**



1. An adjustable support knuckle for a luminaire comprising:

a first body fixedly attached to the housing of said luminaire, said first body having

a generally cylindrical first recess extending inwardly from one side thereof,

a hole extending from the other side of said body through to said recess and coaxially therewith,

an axially facing peripheral shoulder adjacent said one side and at least partially encircling said recess,

a first plurality of uniformly spaced teeth protruding axially from said shoulder, the space between said teeth being greater than a tooth width, and

means defining a passageway from said recess to the interior of said luminaire housing;

a second body coupled to said first body, said second body comprising

a generally cylindrical portion with a circular wall having an outer diameter substantially equal to that of said axially facing shoulder,

a second plurality of uniformly spaced teeth axially protruding from said wall and being engageable between adjacent teeth of said first plurality of teeth,

a second recess extending axially into said second body within said wall,

a hole through said cylindrical portion coaxial with said recess and said wall,

a tubular conduit extending generally radially from said generally cylindrical portion, and

means on said tubular conduit for attachment to a mounting location;

fastener means insertable through said holes in said first and second bodies for holding said bodies together with said teeth engaged in any of a plurality of relative angular positions, said first and second recesses forming a chamber through which electrical wires can extend from said housing and into said conduit; and

an elastomeric sleeve extending between said bodies within said recesses and surrounding said fastener means to separate said fastener means from said wires.

4,543,008

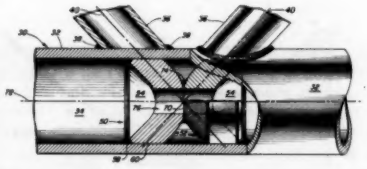
STIFFENING FOR COMPLEX TUBULAR JOINTS

Mamdouh M. Salama, Ponca City, Okla., and Robert B. Pan, Calgary, Canada, assignors to Conoco Inc., Ponca City, Okla.

Filed Oct. 29, 1982, Ser. No. 437,605

Int. Cl.⁴ F16B *7/00*

U.S. Cl. 403—174 **5 Claims**



1. In a reinforced complex joint of a tubular chord member having cylindrical inner and outer surfaces and at least one bracing member having a longitudinal axis and attached to said outer surface of said chord member, the improvement which comprises a multicurvature reinforcing body having a pair of cylindrical surfaces of contact and a pair of bowl-shaped members having abutting base portions and increasing radii outwardly of said abutting base portions to said cylindrical surfaces of contact, said cylindrical surfaces of contact being in abutment against said inner surface of said tubular chord member, said longitudinal axis of said bracing member passing through both said pair of cylindrical surfaces of contact of said multicurvature reinforcing body.

4,543,009

INTERNAL ENDWISE CONNECTOR FOR CHANNEL PROFILE

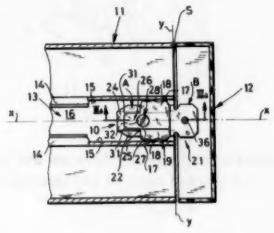
Peter Schwarzfischer, Schalksmühle, Fed. Rep. of Germany; Jochen Schmitz, Birmensdorf, and Peter Scheller, Meilen, both of Switzerland, assignors to Firma Erco Leuchten GmbH, Ludenscheid, Fed. Rep. of Germany

Filed Mar. 4, 1983, Ser. No. 472,197

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 3207711

Int. Cl.⁴ F16B *7/04*

U.S. Cl. 403—201 **10 Claims**



1. A connector receivable in a channel profile with a bottom and a pair of upstanding sidewalls for abuttingly joining an end of said profile to an adjacent member, comprising:

a spring clip with a substantially flat central web and with two legs diverging from said web on opposite sides of a plane of symmetry of said spring clip which longitudinally bisects said channel profile upon a positioning of said spring clip between said sidewalls with said legs resting on the channel bottom close to said sidewalls;

a generally flat spreader parallel to said web slidably inserted between said legs in close contact therewith and at a distance from said web, said spreader having one extremity projecting longitudinally beyond said web along said plane of symmetry and further having an opposite extremity anchorable to said adjacent member, said spring clip being further provided with a tongue extending from said web at an obtuse angle thereto in a direction away from the adjacent member and engaging said one extremity of said spreader; and

clamping means on said spring clip coupled with said spreader and operable to reduce the distance between said spreader and said web, thereby driving said legs further apart and into firm contact with said sidewalls while increasing said obtuse angle with consequent exertion of a longitudinal thrust by said tongue upon said spreader, the resulting longitudinal shift of said spreader relative to said spring clip forcing the adjacent member anchored to said opposite extremity into close contact with the confronting end of said profile.

4,543,010

JOINT MEANS

Alan F. Moore, Burbage, England, assignor to Dunlop Limited, London, England

Filed Sep. 24, 1982, Ser. No. 423,297

Claims priority, application United Kingdom, Dec. 1, 1981, 8136250

Int. Cl.⁴ F16D *1/00*

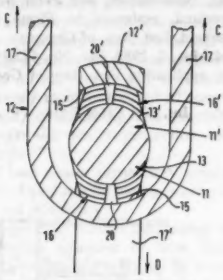
U.S. Cl. 403—225 **8 Claims**

1. An elastomeric joint means for providing a flexible coupling, said joint means having a longitudinal axis and comprising:

two first members, each of said members having a body portion and at least two arms extending from the body portion, said arms extending generally parallel to and radially spaced from said longitudinal axis in a direction towards the body portion of the other member;

a second member positioned radially inwards of said arms,

the body portions of said two first members each having an internal curved surface and said second member having external curved surfaces disposed opposite to and axially spaced from said internal curved surfaces; and



elastomeric means acting between and connecting the respective pairs of external and internal curved surfaces.

4,543,011

CLUTCH FOR RIGIDLY CONNECTING COAXIAL PARTS OF CONSTRUCTION, ESPECIALLY FOR CARDAN SHAFTS

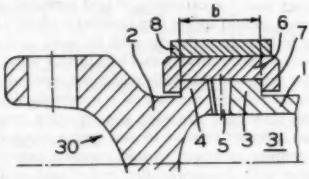
Hans Lindenthal, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,310

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149156

Int. Cl.⁴ F16D *1/00*

U.S. Cl. 403—338 **14 Claims**



1. A clutch for rigidly connectng coaxially arranged construction members for transmission of torgue, as well as stress and strain, comprising:

clutch means on the proximal ends of two coaxially disposed construction members, each said clutch means having a flange member thereon,

a front cog gear being disposed between the facing surfaces of said flange members for transmitting torque, and

a tension sleeve device comprising at least two part-cylindrical segments each including a pair of axially spaced-apart collar members abutting respective axially remote surfaces of said flange members, said tension sleeve segments radially positioned onto and connected to said flange members, said segments being heat shrunk on said flange members to thereby tightly compress said flange members between said collar members.

4,543,012

BARRIER FOR FLOATING POLLUTANTS

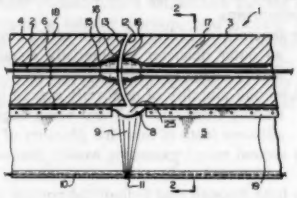
Victor Riley, Toronto, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Jan. 23, 1984, Ser. No. 572,832

Claims priority, application Canada, Feb. 25, 1983, 422466

Int. Cl.⁴ E02B *15/04*

U.S. Cl. 405—71 **5 Claims**



1. A barrier for confining floating pollutants comprising:

a plurality of buoyant tubular boom sections serially interconnected by a cable passing longitudinally therethrough;

a flexible skirt, having an upper edge portion and lower edge portion, means attaching the upper edge portion of the skirt to a lower portion of the boom sections except for a portion at the joints to define a non-attached edge portion between adjacent boom sections;

a lower cable member attached to the lower edge portion of the skirt;

said non-attached edge portion of the skirt comprising a portion that is elastic or has a length greater than the distance between corresponding points of the boom sections for forming an upwardly oriented channel, operative, with water passing between the boom sections and non-attached portion of the skirt, to channel water upwardly from below the surface, restricting the passage of floating pollutants.

4,543,013

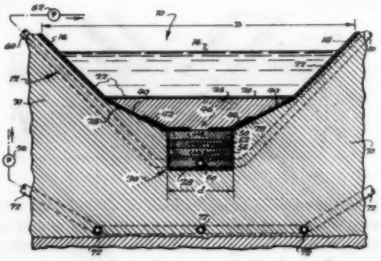
GROUNDWATER PROTECTION SYSTEM

Louis E. Wagner, Eggertsville, N.Y.; Harold F. Flannery, Batavia, Ohio, and Randolph W. Rakoczynski, Grand Island, N.Y., assignors to Environmental Design, Inc., Palm Beach, Fla.

Continuation-in-part of Ser. No. 324,067, Nov. 23, 1981,. This application Nov. 14, 1983, Ser. No. 550,781

Int. Cl.⁴ E02D *3/00*; E02B *3/16*

U.S. Cl. 405—128 **15 Claims**



1. A groundwater protection system comprising an impoundment for receiving and storing hazardous industrial wastes for subsequent treatment and disposal of said wastes, said impoundment comprising a first compartment for receiving said hazardous industrial wastes, a second compartment underlying said first compartment and containing reactive treatment material for treating any leakage which may escape from said first compartment, and means for substantially restricting migration of leakage from said first compartment to

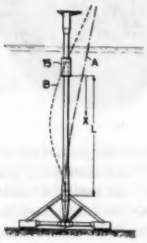
said second compartment, said means including a liner constructed of material substantially impervious to the passage of said leakage and being located between said first compartment and said second compartment.

4,543,014

OFF-SHORE MOORING STRUCTURE

Roberto Brandi; Francesco Di Lena, both of Padua; Silvestro Vanore, Venezia-Mestre, all of Italy; Tor Naess, Voyenenga, and Paul U. Schamaun, Oslo, both of Norway, assignors to Norsk Agip A/S, Oslo, Norway

Filed Jun. 29, 1982, Ser. No. 393,310
Claims priority, application Italy, Jul. 16, 1981, 22972 A/81
Int. Cl.⁴ B63B *21/00, 35/40;* **E02B** *17/00;* **E02D** *5/62*
U.S. Cl. 405—207 **7 Claims**



1. A structure for mooring ships offshore and loading them comprising an emerging portion equipped with mooring and loading facilities and an immersed portion, characterized in that said immersed portion is monolithic and is composed of a broadened rigid foundation block and a slender vertical structure having a flexural resistance modulus decreasing from the foundation block towards the sea surface, said vertical structure having a hollow buoyancy body located on the upper end of said slender vertical structure at a depth between 12% and the 30% of the length of said slender vertical structure between the sea surface and the foundation block, said structure further characterized in that the flexural moment of inertia of the slender vertical structure is increased in the portion between the buoyancy chamber and the point of connection with the foundation block according to the formula:

$$\frac{J}{J_o} = 1 + K_2\left[\frac{x}{L}\right]^2$$

wherein reference being had to FIG. 3 of the accompanying drawings, J is the flexural moment of inertia of a cross-section situated at a distance x from the buoyancy chamber, J_o is the moment of inertia of the cross-section of connection with the buoyancy chamber, L is the length of the portion between the buoyancy chamber and the point of connection with the foundation block, K_2 is a coefficient (adimensional) comprised between 1.6 and 2.5.

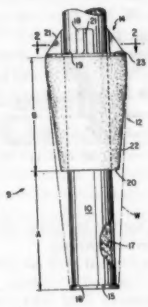
4,543,015

PILE HAVING WEDGE FORMER

William E. Kruse, 1009 Hillside Ave., Plainfield, N.J. 07060

Filed Sep. 14, 1983, Ser. No. 532,210
Int. Cl.⁴ E02D *5/30, 5/48*
U.S. Cl. 405—256 **32 Claims**

1. A wedge-forming pile which comprises:
(a) an elongated pile shaft having a bottom tip and an upper end and
(b) wedge-forming means of castable material spaced upward of the tip of the pile shaft and proximate to said tip,
(c) said pile shaft extending above and below said wedge-forming means,
(d) the minimum combined width of said pile shaft and accompanying wedge-forming means from side wall to said wall being greater than the width of said pile shaft immediately above said wedge-forming means and greater than the width of said pile shaft immediately below said wedge-forming means,



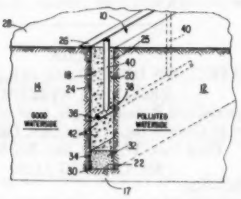
(e) the ratio of the height of said wedge-forming means to the width of said pile shaft immediately below said wedge-forming means being within the range of 2:1 through 3.5:1,
(f) whereby the outer portions of said tip, said wedge-forming means and the portions of the pile shaft therebetween accommodate the formation of a soil wedge during driving of said pile.

4,543,016

UNDERGROUND LEACHATE BARRIER AND METHOD OF MAKING SAME

Gilbert R. Tallard, 128 Corlies Ave., Pelham, N.Y. 10803

Filed Nov. 14, 1983, Ser. No. 551,463
Int. Cl.⁴ E02D *5/18*
U.S. Cl. 405—267 **13 Claims**



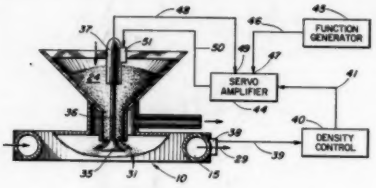
1. A barrier for preventing underground leachate from flowing across a trench dug adjacent a contaminated area comprising:
(a) a trench extending from ground surface to a fluid impervious stratum,
(b) membrane means of fluid impervious material in said trench having an upper end adjacent the top of said trench and extending to a lower end adjacent the bottom of said trench,
(c) plug means extending along said bottom of said trench in fluid sealing engagement with said lower end of said membrane means and said fluid impervious stratum, and
(d) filter means extending from said plug means to said top of said trench.

4,543,017

APPARATUS FOR THE CONTROL FOR INJECTION OF DRY SOLIDS INTO A HIGH PRESSURE FLUID STREAM

Jeffrey L. Beck, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Aug. 1, 1983, Ser. No. 519,474
Int. Cl.[4] B65G *53/30*
U.S. Cl. 406—31 **4 Claims**



1. Apparatus for the injection of dry solids into a high pressure fluid stream comprising:

(a) a chamber formed with an axis and having a cylindrical side wall, a top and a bottom;

(b) a high pressure fluid inlet means mounted tangentially through said cylindrical side wall;

(c) a high pressure fluid outlet means mounted tangentially through said cylindrical side wall;

(d) hopper means mounted over said top and having an outlet extending through said top and into said chamber, said hopper outlet aligned with the axis of said chamber, said hopper means adapted to receive dry solids for flow to deposit said dry solids into said chamber;

(e) low pressure fluid outlet means mounted to said chamber and communicating with the internal region proximate the axis of said chamber; and

(f) valve means mounted across the outlet of said hopper means including a valve control means that is actuatable to control the amount of particulate solids passing from said hopper means into said chamber; means for vibrating the valve means to effect controlled vibration of the valve means, the amplitude of vibrations of the valve means being controlled by said valve control means;

whereby a portion of the fluids entering said high pressure inlet means will exit said low pressure outlet means forming a vortex proximate the axis of said chamber thereby permitting the entry of dry solids for mixing with high pressure fluid for outlet flow through said high pressure fluid outlet means.

4,543,018

TWO SECTION DEEP SUMP SOLIDS SLURRY RECOVERY SYSTEM

Gary R. Harris, and Ronald L. Oda, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

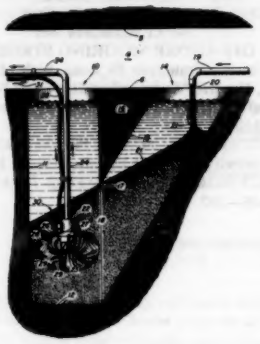
Filed Nov. 17, 1983, Ser. No. 552,941
Int. Cl.[4] B65G *53/30*
U.S. Cl. 406—102 **8 Claims**

1. A sump for the deposit and removal of particulate material which is mixed with a fluid comprising:

a. a first reservoir formed in the surface of the earth;

b. a second reservoir formed in the surface of the earth, said first and second reservoirs having a top at the surface of the earth and extending from said surface to a predetermined depth in the earth forming a bottom, and wherein each of said reservoirs has a common wall from said surface to a location intermediate said surface and said predetermined depth wherein said common wall terminates forming an opening between said first and second reservoirs;

c. means for depositing particulate material in said first reservoir so that said material is free to fill said first reservoir and move through said opening to said second reservoir, said material filling said second reservoir has an upper surface wherein said upper surface is inclined at an angle equal to the angle of repose of said material in said second reservoir;



d. pump means mounted in said second reservoir under said upper surface of said material at a depth greater than said upper surface of said material but less than a depth where said pump cannot be withdrawn; and

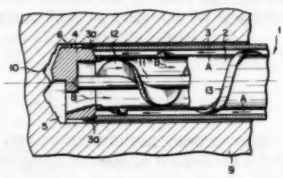
e. means for adding fluid to said sump.

4,543,019

BORING TOOL

Hiroshi Shikata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 28, 1982, Ser. No. 402,439
Int. Cl.[4] B23B *51/06*; E21B *10/44*
U.S. Cl. 408—57 **8 Claims**



1. A boring tool which comprises:

a hollow boring tool body comprising a hollow boring bar having inner and outer walls, a hollow boring head fitted to one end of said hollow boring bar and cutting tips fitted to the end of said hollow boring head;

a cutting fluid-supply system providing cutting fluid to said cutting tips consisting of cutting fluid-supplying means associated with said hollow boring tool body for forcefully carrying forward from the other end of said hollow boring bar an externally supplied cutting fluid to the end of said hollow boring head due to the rotation of said boring tool body; and

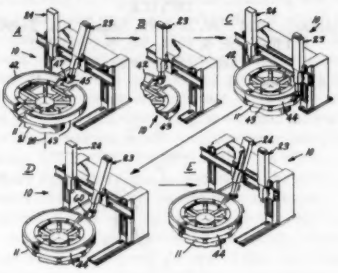
cutting fluid-discharging means associated with said hollow boring tool body for carrying back to said other end of said hollow boring bar the cutting fluid which has been forcefully carried forward to said one end due to the rotation of said boring tool body.

4,543,020

METHOD OF MANUFACTURING LARGE GEARS

Boris A. Shtipelman, Rochester, N.Y., assignor to USM Corporation, Farmington, Conn.

Filed May 16, 1983, Ser. No. 494,631
Int. Cl.[4] B23F *5/22*
U.S. Cl. 409—12 **4 Claims**



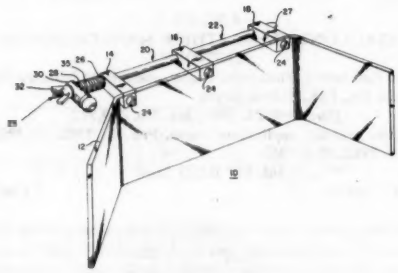
1. A method of manufacturing large gears on a vertical boring mill having a single machining center axis about which a rotary table rotates including the steps of: securing an unmachined unitry large gear blank centered on the rotary table of said boring mill for rotation about said axis, turning the concentric surfaces and faces of the secured blank by movement of a tool relative to said table during rotation thereof, to form a finished gear blank, machining mounting holes and surfaces on the finished gear blank which remains secured to said table; and forming the gear teeth on the finished blank which remains secured to said table.

4,543,021

SAFETY SHIELD FOR A MILLING MACHINE, DRILL PRESS, AND THE LIKE

David T. Adler, 110 Dumbarton Dr., Huntington, N.Y. 11743

Continuation-in-part of Ser. No. 431,006, Sep. 30, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,057
Int. Cl.[4] B23C *9/00*
U.S. Cl. 409—134 **6 Claims**



1. A safety shield for milling machine, drill press and like equipments, comprising:

a protective shield;

a shaft;

a plurality of support members apertured to receive said shaft and coupled to said shield to rotate said protective shield about said shaft as an axis;

a plurality of spacer supports also apertured to receive said shaft and coupled between adjacent ones of said support members on said shaft;

first means coupled to said shaft for connecting said protective shield to the one of said milling machine, drill press and like equipments with which said protective shield is to be used at any given instand of time;

a compressible spring on said shaft having a first end portion to bear against said first means, and also having a second end portion;

an adjustable fastener movable along said shaft in exerting a compressive force against said compressible spring;

second means intercoupled between said second end portion of said compressible spring and said adjustable fastener for securely locking said spring to the compressed position established by the movement of said adjustable fastener along said shaft; and

an additional spacer support apertured to receive said shaft, coupled between said first means and the one of said support members most proximate to said first means along said shaft;

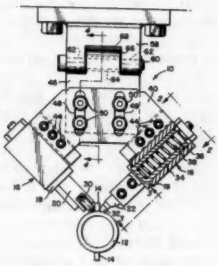
whereby the movable adjustment of said fastener along said shaft in a direction to secure said protective shield for use, exerts a compressive force on said compressible spring via said second means to provide an adjustable drag resistance on said protective shield in limiting the rotational freedom of said protective shield about said shaft as an axis.

4,543,022

SELF-POSITIONING SCARFING APPARATUS

Stanley V. Bonner, Pottersville, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Mar. 24, 1983, Ser. No. 478,387
Int. Cl.[4] B23D *1/26*
U.S. Cl. 409—298 **26 Claims**



1. A self-positioning apparatus for scarfing a workpiece having a plurality of parallel welds comprising:

a plurality of scarfing tools, each of said scarfing tools being mounted on a support and having a portion for engaging the welds;

a plurality of sensing elements, each of said sensing elements being mounted on one of said supports and having a portion for engaging the welds, wherein each said support has mounted thereon one of said scarfing tools and one of said sensing elements, which together define an operative set, and said portion of the sensing element and said portion of the scarfing tool of each said operative set lie along a line which is substantially parallel to said welds;

means for biasing each said support toward the workpiece so that the scarfing tools and the sensing elements engage the welds; and

a yoke carrying two of said operative sets for scarfing two of said parallel welds,

wherein the workpiece is a tube having a pair of fins, and the operative sets of the yoke are positioned to scarf on opposite sides of the same fin.

4,543,023

FASTENER

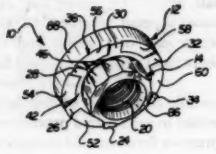
Terry D. Capuano, Hinckley, Ohio, assignor to Russell, Burdsall & Ward Corporation, Mentor, Ohio

Continuation of Ser. No. 268,067, May 28, 1981, Pat. No. 4,432,681. This application Feb. 17, 1984, Ser. No. 581,245

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.[4] F16B *37/04, 39/00*

U.S. Cl. 411—180 **3 Claims**



1. A fastener adapted to be received in a member and held against axial and rotational movement relative to the member by interaction between the member and said fastener, said fastener comprising a head section having a central axis, a shank section extending axially outwardly from said head section and having a central axis coincident with the central axis of said head section, said head section having a rim portion which extends radially outwardly from and faces axially outwardly along said shank section, a thread convolution connected with and disposed in a coaxial relationship with said head and shank sections, an annular groove formed in the rim portion of said head section and circumscribing said shank section, a plurality of flat arcuate stop surfaces areas disposed in a spaced apart relationship in a circular array on the rim portion of said head section and circumscribing said shank section, said annular groove having a radially outer side surface with the same general configuration as the configuration of the frustum of a cone and which extends at an acute angle to the plane containing the stop surface areas, each of said stop surface areas extending radially outwardly from an arcuate line of intersection with said outer side surface of said groove and being disposed in a plane which extends perpendicular to the central axis of said head section and contains a radially and axially outermost edge of said groove, said stop surface areas being engageable with the member to limit the extent of axial movement of said fastener as it is inserted into the member, a plurality of wedge shaped compression ramps disposed on said rim portion of said head section in a circular array circumscribing said shank section and extending radially outwardly from said groove, each of said wedge shaped compression ramps being disposed between and projecting axially outwardly of a pair of said stop surface areas and having a face surface which slopes radially and axially inwardly toward said shank section from a radially outer end portion disposed axially outwardly of the plane containing said stop surface areas, said stop surface areas having an arcuate extent which is at least twice as great as the arcuate extent of said compression ramps about the center of said shank section, each of said compression ramps having a pair of parallel wedge shaped side surfaces which extend perpendicular to the plane containing said stop surface areas, said face surfaces on said compression ramps being formed as continuations of said radially outer side surface of said groove and extending at the same acute angle relative to the plane containing said stop surface areas as said radially outer side surface of said annular groove, a plurality of side surface areas disposed on said shank section in a circular array having a central axis coincident with the central axis of said shank section, each of said side surface areas extending axially outwardly from said groove to an axially outer end portion of said shank section, said compression ramps being effective to force the material of the member into the groove and around the side surface areas on said shank section as the fastener is inserted into the member to thereby hold said fastener against axial and rotational movement relative to the member, said surface areas and said compression ramps extending radially outwardly from said annular groove to the periphery of said head section.

4,543,024

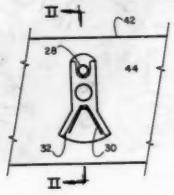
COMBINED WASHER AND COTTER PIN ANTI-SNAG DEVICE

John Hackney, 1026 NW. 16th St., Stuart, Fla. 33494

Filed Apr. 6, 1984, Ser. No. 597,492

Int. Cl.[4] F16B *21/01*

U.S. Cl. 411—364 **6 Claims**



1. A combined washer and cotter pin anti-snag device comprising:

a base portion having an approximately rectangular section and an integral approximately trapezodial section,

a raised portion integral with said base portion which has:

a V-shaped section substantially conterminous with the outer edges of said trapezodial section,

a U-shaped section substantially conterminous with part of the outer edges of said rectangular section,

a central section integrally joined at one side to said V-shaped section and at the opposite side to said U-shaped section,

a transverse hole in said central section through which a fastener is adapted to extend, and

a longitudinal hole in said central section above said base portion through which a cotter pin is adapted to extend so that the legs of said cotter pin may be spread apart against the inside surfaces of said V-shaped section.

4,543,025

METAL CONTAINERS - THEIR MANUFACTURING METHODS

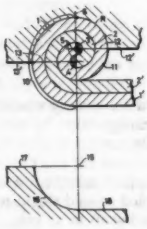
Takao Tsukamura, Funabashi, Japan, assignor to Nittetsu Steel Drum Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1983, Ser. No. 469,572

Claims priority, application Japan, Feb. 26, 1982, 57-29044; Aug. 9, 1982, 57-137363

Int. Cl.[4] B21D *51/00*

U.S. Cl. 413—6 **7 Claims**



1. A method of manufacturing a metal container having a cylindrical body and an end closure closing at least one end of

the body and having a seam at said one end of said body formed from seaming flanges extending outward in a radial plane from an edge portion of said body and from an edge portion of said end closure, which method comprises the steps of:

providing a seaming roll having a forming groove the cross-sectional profile of which comprises a semicircular arc and a chuck ring having a cylindrical chucking face and a forming groove the cross-sectional profile of which comprises a quarter circular arc; placing said seaming roll and said chuck ring in relative positions with the center of curvature of said arc of said forming groove of the seaming roll and the center of curvature of said arc of the forming groove of said chuck ring, at the time the seaming roll and chuck ring are moved together upon completion of seaming, being spaced parallel to the axis of the cylindrical body a distance equal to one-half of the sum of the thicknesses of the body flange and the end flange;

fitting said end closure into said body with the end closure flange overlapping and extending outwardly from the container along and beyond the end of the body flange;

fitting said chuck ring into said end closure and rotating said chuck ring for rotating the end closure and body around the axis of the body;

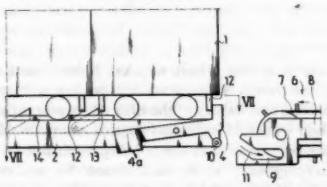
moving said seaming roll toward said chuck ring for forming the flanges of the end closure and the body along the profiles of the forming groove of the seaming roll and the chuck ring into a seam having a plurality of semicircular arcs concentric about the center of curvature of the forming groove of the seaming roll and a plurality of quadrant shaped arcs and semicircular arcs concentric about the center of curvature of the forming groove of the chuck ring.

4,543,026

PICK-UP MEANS FOR ROLLER PALLETS

Heino Halonen, Hyvinkää ; Kalevi Hetemaa, and Frans Vainio, both of Helsinki, all of Finland, assignors to Elevator GmbH, Baar, Switzerland

Filed Nov. 30, 1982, Ser. No. 445,506
Claims priority, application Finland, Nov. 30, 1981, 813833
Int. Cl.⁴ B60P *1/64*
U.S. Cl. 414—352 **8 Claims**



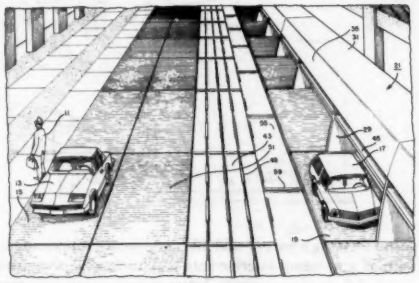
1. A pick-up means for roller pallets which run on rails and having at their discharge end a stop means which prevents discharging a roller pallet until engaged by a pick-up means provided with a travelling surface comes to get the roller pallet, wherein the improvement comprises that the stop means is pivotably attached to one of the rails, and the pick-up means includes a slide movable in its longitudinal direction and provided with a transporter, said slide having a downwardly directed guide slot located at its forward end adjacent the transporter, means on said stop means for engagement with the downwardly directed guide slot, the slide being movable in under the roller pallet standing first on the rails, while at the same time the downwardly directed guide slot disengages the pivotable stop, so that the roller pallet can be moved onto the travelling surface of the pick-up means without any tilting while being pulled by the transporter on the slide.

4,543,027

ROLLER PALLET SYSTEM FOR LOADING VEHICLES ON A TRAIN

Michael N. Jones, 4509 Highland Ter., Austin, Tex. 78731

Filed Oct. 11, 1983, Ser. No. 540,546
Int. Cl.⁴ B65G *67/04*
U.S. Cl. 414—400 **3 Claims**



1. A loading system for loading vehicles onto a railroad car, comprising in combination:

a base mounted on wheels to be supported on rails and having a lower enclosure extending around the perimeter of the base;

a frame that is vertically movable relative to the base, the frame being carried on the base and having upper and lower compartments for carrying vehicles;

an upper enclosure that is vertically movable relative to the base, the upper enclosure fitting over the frame and mating with the lower enclosure to fully enclose the frame;

opening means located below and separate from said railroad car, said opening means extending upwardly for engagement with said upper enclosure for moving the upper enclosure relative to the base and lower enclosure to expose the sides of the compartments for loading;

lifting means located below and separate from said railroad car, said lifting means extending upwardly for engagement with said frame for raising the frame above the lower enclosure to level the compartments with a loading dock, to allow vehicles to be loaded into the compartments, and for lowering the frame with the loaded vehicles onto the base and into the lower enclosure for transporting the vehicles; and

means for moving the vehicles laterally from the loading dock into the compartments.

4,543,028

DUMP APPARATUS FOR TRASH CONTAINERS

James L. Bell, Lake Orion, and John Horvath, Inkster, both of Mich., assignors to Bell Equipment Company, Troy, Mich.

Filed Jan. 13, 1984, Ser. No. 570,603
Int. Cl.⁴ B65F *3/02*
U.S. Cl. 414—408 **9 Claims**

7. A trash pick-up and dumping apparatus of the type adapted for mounting on a vehicle having an open-top, trash-receiving body comprising

vertical support means adapted to be mounted on said vehicle alongside the trash-receiving body thereof;

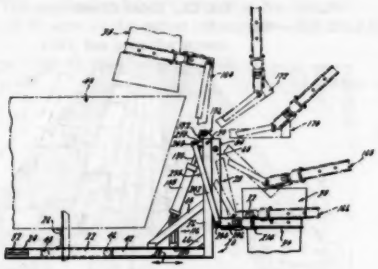
lift frame means disposed alongside said vertical support means and connected thereto at the upper end thereof by horizontal pivot means;

means carried by said lift frame means below said horizontal pivot means for engaging and detachably holding a trash container;

power actuator means for swinging said lift frame means about said horizontal pivot means to dump said trash container into the trash-receiving body of a vehicle on

which said trash pick-up and dumping apparatus is mounted, said power actuator means including

crank arm means pivotally connected to said lift frame means below said horizontal pivot means, and



means forming a part of said lift frame means supporting said crank arm means intermediate said horizontal pivot means and the pivot connection between said crank arm means and said lift frame means during at least a portion of the vertical swinging movement of said lift frame means.

4,543,029

DEVICE FOR CUTTING FLEXIBLE CONTAINERS CONTAINING FUNGIBLE MATERIAL

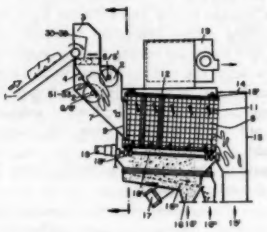
Gustav Grün, Ortenberg, and Klaus Borgner, Hirzenhain, both of Fed. Rep. of Germany, assignors to Luco-Technic GmbH Verfahrenstechnische Anlagen, Lissberg, Fed. Rep. of Germany

Filed Sep. 7, 1983, Ser. No. 529,943

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235711; Jun. 1, 1983, 3319852

Int. Cl.⁴ B65G *65/34*

U.S. Cl. 414—412 **21 Claims**



1. An apparatus for cutting bags into bag parts, wherein each bag contains powdery to granular goods, and/or granular to flocculent goods, as well as for loosening, fragmentation and separation of the goods from the bag, or from parts of the bag, and wherein each bag is made of paper, synthetic material, jute or the like,

comprising in combination,

a receiving housing,

a cutting mechanism disposed in said receiving housing,

a conveyor arranged to feed said cutting mechanism,

a drum housing communicating with said receiving housing, and having separate outlets for the bag parts, and for the goods to be discharged, respectively,

a sieve drum disposed in said drum housing, and having a predetermined length,

a directional chute having an inlet, being disposed in said receiving housing, and being provided with a floor,

said cutting mechanism including a plurality of cutters disposed partly above said floor and partly therebelow, said cutters having an inlet region, said directional chute having through-going openings for said cutters,

an axle secured to said chute near said inlet, said floor being disposed pivotably about said axle, said axle being inclined along the direction of said inlet region in dependence on a load acting thereon,

at least one resilient element supported at least indirectly on said receiving housing so that the inclination of said floor for a practically equal penetration depth of said cutters into the bag is set independently of the weight and thickness of the bag,

said cutters being arranged in pairs so that the cutters of each pair face one another, a first cutter of the pair being coaxially aligned with the first cutters of all remaining pairs, the second cutter of the pair being coaxially aligned with the second cutters of all remaining pairs,

at least one accumulation ring extending in a discharge direction, starting from a supply side of said goods, at least over a partial region of the length of said sieve drum.

4,543,030

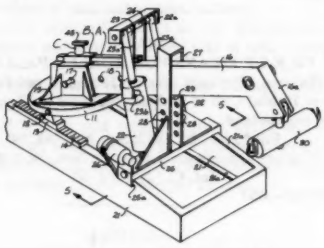
FIFTH WHEEL WRECKER HOIST

Wallace H. Hawkins, P.O. Box 3726, Greenville, S.C. 29608

Filed Dec. 30, 1983, Ser. No. 567,362

Int. Cl.⁴ B60P *3/12*

U.S. Cl. 414—563 **1 Claim**



1. For use in a fifth wheel wrecker hoist having a boom extending rearwardly from a tractor having a longitudinal frame extending rearwardly of the fifth wheel pivotally carried thereon, fluid operated cylinders carried on each side of an intermediate portion of said boom being extensible for raising a sling carrying said boom, and means for securing said wrecker hoist to said longitudinal frame, means affording a longitudinal adjustment between said fifth wheel and said boom comprising:

a tubular longitudinal guide having plurality of spaced openings fixed with respect to said boom and carried in longitudinal alignment on an upper surface thereof;

a support fixed with respect to the fifth wheel having a portion in superposed relation to said spaced openings;

a plunger carried by said support in vertical alignment with respective spaced openings;

spring means carried by said support normally urging said plunger downwardly; and

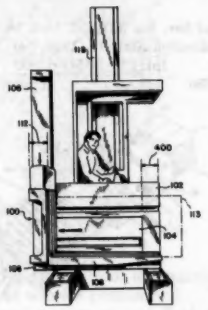
a stop means maintaining said plunger in retracted position during longitudinal adjustment of said boom with respect to said fifth wheel releasable to permit said plunger to be received in locking engagement with said respective openings maintaining said boom in longitudinally adjusted position.

4,543,031

APPARATUS FOR SIDESHIFT CARRIAGE CONTROL

Donald Luebrecht, Fort Jennings, and Nicholas D. Thobe, Celina, both of Ohio, assignors to Crown Controls Corporation, New Bremen, Ohio

Filed Apr. 22, 1983, Ser. No. 487,626
Int. Cl.[4] B66F 9/14; B60P 1/34
U.S. Cl. 414—631 16 Claims



1. In a side loading material handling vehicle having a primary carriage, a sideshift carriage mounted for lateral movement relative to said primary carriage, a traverse carriage comprising an elevating mast assembly mounted for lateral movement relative to said sideshift carriage, and load supporting means comprising material handling forks mounted to and vertically movable along said elevating mast and being extendable to either side of said primary carriage, an improved sideshift carriage control system comprising:

sideshift carriage position sensing means comprising first and second electrical switches mounted to said primary carriage for generating first and second home position signals;

actuator means comprising first and second extensions mounted to said sideshift carriage, said first extension being positioned to engage said first electrical switch when said sideshift carriage is in a first home position corresponding to said load supporting means handling items on one side of said primary carriage and said second extension being positioned to engage said second electrical switch when said sideshift carriage is in a second home position corresponding to said load supporting means handling items on the side of said primary carriage opposite to said one side to thereby cause said sideshift carriage sensing means to generate said first and second home position signals, the position of said first and second extensions being based on the load size to be handled by said vehicle so as to center the elevating mast and the load carried thereby relative to the primary carriage but extending substantially equally beyond opposite sides of the primary carriage; and

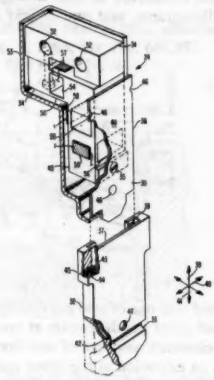
control means responsive to said first and second home position signals for inhibiting continued lateral movement of said sideshift carriage beyond said first home position for items handled on one side of said primary carriage and for inhibiting continued lateral movement of said sideshift carriage beyond said second home position for items handled on said opposite side of said primary carriage whereby a variety of load sizes may be engaged and supported by said load supporting means in preferred load carrying positions in which said load and said load supporting means together extend substantially equal distances beyond opposite sides of said primary carriage regardless of the side of said primary carriage to which said load supporting means has been extended.

4,543,032

ROBOT MANIPULATOR WITH AUTOMATICALLY CHANGEABLE FINGER TOOLS

Theodore W. Leverett, and Bela Musits, both of Concord, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 2, 1983, Ser. No. 471,569
Int. Cl.[4] B25J 15/04
U.S. Cl. 414—730 10 Claims



1. An object manipulator, comprising a gripper having at least two relatively movable fingers mounted in opposition for mutual force engagement and control means for controlling the movement of said fingers, wherein the improvement comprises:

at least one of said fingers having a pedestal for receiving a tool, said pedestal and tool comprising track means therebetween for permitting relating movement therebetween along a first axis of said finger, the track means positively resisting relative movement therebetween along two axes normal to said first axis,

spring-biased detent means provided on said pedestal and the tool for yieldably retaining the tool against displacement along said first axis only in the absence of substantial loading along said first axis, and

said control means comprises means for selectively controlling the mutual force engagement between said fingers to provide a frictional force between said pedestal and the tool for resisting relative movement therebetween along said first axis.

4,543,033

INDUSTRIAL ROBOT

Ladislaus Czermak, Reichertshofen; Winfried Steinhart, Haberskirch, both of Fed. Rep. of Germany; Karl-Franz Binder, Ingolstädter Strasse 22, 8077 Reichertshofen, Fed. Rep. of Germany, and Paul Steinhart, Herbrechtingen, Fed. Rep. of Germany, assignors to Karl-Franz Binder, Reichertshofen, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,813
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211688
Int. Cl.[4] B25J 9/00
U.S. Cl. 414—732 3 Claims

1. An industrial robot comprising:

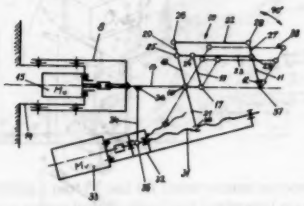
a support bed displaceable in two mutually perpendicular horizontal directions;

guide means on said support bed forming a vertical guide;

means mounting an arm on said guide for vertical displacement thereon, said mounting means including means for rotating said arm about an arm axis;

a double parallelogrammatic linkage connected to said arm and having two parallelograms each with four pivotally connected elements so interconnected that one pair of parallel first elements of one of said parallelograms extend at an angle relative to one pair of parallel second elements of the other of said parallelograms, said one of said parallelograms being pivotally connected to said arm at one location by one of said first elements;

a holder connected to said linkage by said other of said parallelograms, said one of said first elements extending



beyond said one of said parallelograms to form an element of said other parallelogram at one end of said one of said first elements, said one of said first elements being formed with an extension at the other end thereof;

a housing pivotally connected to said arm at a location spaced from said one location;

a threaded spindle rotatable on said housing;

a threaded member engaging said spindle and displaceable thereby while being pivotally connected to said extension for displacing said linkage to vary the angle.

4,543,034

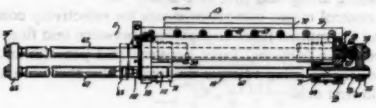
LINEAR TRANSFER STROKING BOOM

Leland F. Blatt, Grosse Pointe Shores, Mich., and L. Douglas Blatt, 31915 Groesbeck Hwy., Fraser, Mich. 48026, assignors to L. Douglas Blatt, Grosse Point Farms, Mich.

Filed Mar. 29, 1984, Ser. No. 594,342

Int. Cl.[4] B23Q *7/04*

U.S. Cl. 414—752 **17 Claims**



1. A linear transfer stroking boom comprising an elongated housing having a longitudinal axis suspended from a support and having spaced end plates;

an elongated cylinder assembly within said housing mounted upon said end plates including a reciprocal piston rod on said axis movable through one of said end plates;

a plurality of spaced guide rods parallel to said axis extending through said housing slidably mounted upon said end plates and extending outwardly thereof;

a pair of upright boom mount plates outwardly of said end plates spanning and receiving the ends of said guide rods and secured thereto;

said piston rod being connected to one of said boom mount plates, whereby reciprocal movements of said piston rod effects reciprocal movements of said guide rods and boom mount plates relative to said housing;

apertured longitudinally spaced aligned boom mount brackets removably mounted upon and aligned with the ends of said boom mount plates respectively and secured thereto;

a pair of parallel boom extension arms extending through aligned boom mount brackets and secured thereto and extending forwardly of one of said boom mount plates;

and a workpiece gripper assembly spanning and depending from the free ends of said boom arms.

4,543,035

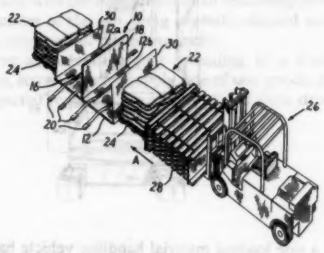
METHOD FOR LOADING CARGO

George J. Lair, 17 Battery Pl., Suite 2022, New York, N.Y. 10004

Continuation of Ser. No. 311,556, Oct. 14, 1981, abandoned. This application Mar. 14, 1984, Ser. No. 589,589

Int. Cl.[4] B65G *67/00*

U.S. Cl. 414—786 **5 Claims**



1. A method of loading palletized bags and the like of cargo into the hold of a vessel, comprising the steps of:

arranging cargo sling means on a platform means having a support surface, wherein each of said slings has a first and second end;

placing a slip sheet on said support surface over said cargo sling means;

pushing said cargo as a substantially intact unit off of a pallet onto said slip sheet on said support surface and over said cargo sling means;

coupling said first and second ends of said cargo sling means to a hoist means;

hoisting said substantially intact unit of cargo off said support surface and onto said vessel;

lowering said substantially intact unit of cargo onto a pair of spaced support arms of a fork lift in said hold;

unhooking one of said first and second ends of said cargo sling means from said hook means; and

withdrawing said hoist means and said slings from said substantially intact unit of cargo, whereby said cargo can thereafter be placed in a desired location by said fork lift.

4,543,036

FLUID COMPRESSOR CONTROL AND OPERATION

Donald L. Palmer, Cave Creek, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 333,500, Dec. 22, 1981, Pat. No. 4,470,256. This application Jan. 12, 1984, Ser. No. 570,070

Int. Cl.[4] F01D *17/00*; F04D *1/00*

U.S. Cl. 415—1 **10 Claims**

1. The method of controlling a fluid compressor including a compressor rotor journaled within a housing, said housing providing a fluid inlet to said rotor and an outlet therefrom, said method including the steps of:

providing a guide vane which is movable into said inlet upstream of said compressor rotor;

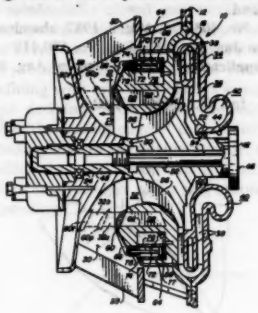
moving said guide vane into and out of said inlet to respectively impart and relieve a tangential velocity to fluid flowing in said inlet to said compressor rotor;

imparting said tangential velocity only to a selected portion of said fluid flowing in said inlet to said compressor rotor while maintaining the remainder of said fluid flow substantially free of said imparted tangential velocity;

flowing said selected portion of said fluid flow to a radially

outer portion of said compressor rotor while flowing said remainder of said fluid flow to a radially inner portion of said compressor rotor;

separating said selected portion of said fluid flow from said



remainder of said fluid flow prior to imparting said tangential velocity to said selected portion; and

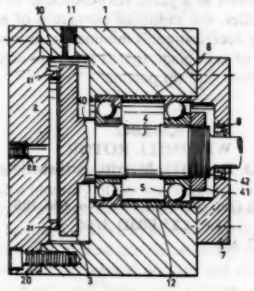
reuniting said selected portion of said fluid flow with said remainder of said fluid flow after imparting said tangential velocity to said selected portion.

4,543,037

ROTARY HIGH-PRESSURE, LOW-CAPACITY PUMP

Izhak Etsion, Haifa, Israel, assignor to Technion Research & Development Foundation Limited, Haifa, Israel

Filed Jan. 16, 1984, Ser. No. 571,661
Int. Cl.⁴ F01D *1/36*
U.S. Cl. 415—90 **7 Claims**



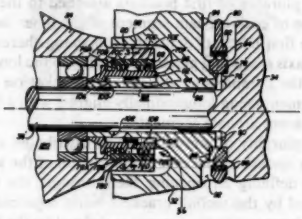
1. A rotary hydraulic pump adapted to convey a fluid from a low-pressure zone into a high-pressure zone, comprising a stationary casing provided with a first fluid port in said high-pressure zone and with a second fluid port in said low-pressure zone; a rotor rotatable about an axis in said casing and having a smooth and uniform surface; a stator connected to said casing and having a major surface facing said rotor surface; the pump being characterized by said stator surface being separated from said rotor smooth surface by at least two gap widths, said stator including a ridge protruding in the direction of said axis from the major surface of said stator, said ridge defining a closed curve separating said high-pressure zone from said low-pressure zone, said curve being so formed that a tangent to every point of said closed curve forms an acute, positive or negative, angle with the relative velocity vector of said rotor surface passing through that point, or coincides with said curve, and that at all points of said curve where the relative velocity vector of said rotor surface is directed from the zone of high pressure to the zone of low pressure. the width of the gap between said opposing surfaces is smaller than it is at those points where the velocity vector is directed from the zone of low pressure to the zone of high pressure.

4,543,038

SEALING APPARATUS AND METHOD AND MACHINERY UTILIZING SAME

Sam S. Kitaguchi, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Continuation of Ser. No. 355,505, Mar. 8, 1982, abandoned. This application Sep. 4, 1984, Ser. No. 647,852
Int. Cl.⁴ F04D *29/10*
U.S. Cl. 415—112 **32 Claims**



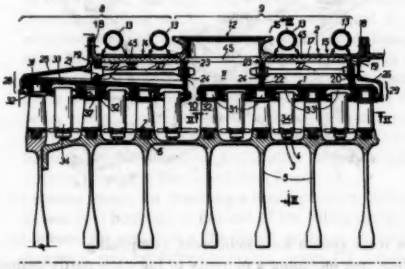
1. Structure having a housing defining an opening, a relatively rotatable shaft means received in said opening, and a seal apparatus circumscribing said shaft means and cooperating with said housing and said shaft means to substantially prevent leakage of a liquid through said opening in response to a flow of pressurized sealing fluid to said seal apparatus, and centrifugally responsive valve means upstream of said seal apparatus and rotating to control said sealing fluid flow as a function of rotational speed.

4,543,039

STATOR ASSEMBLY FOR AN AXIAL COMPRESSOR

Jean-Pierre Ruis, Le Chatelet en Brie, and Marcel R. Soligny, Chevilly-Larue, both of France, assignors to Societe National d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.-M.A." , Paris, France

Filed Nov. 1, 1983, Ser. No. 547,711
Claims priority, application France, Nov. 8, 1982, 82 18651
Int. Cl.⁴ F04D *29/54*
U.S. Cl. 415—190 **9 Claims**



1. A stator assembly for an axial compressor to control the relative thermal expansion between the stator assembly and a rotor having a plurality of rotor blades thereon, wherein the stator assembly is disposed about the rotor assembly and comprises:

(a) an annular inner casing having an interior surface and an exterior surface, the interior surface defining a plurality of

circumferential grooves, the inner casing comprising a plurality of arcuate segments, each segment having parallel lateral edges disposed obliquely to a longitudinal axis of the compressor;

(b) means to attach a plurality of stator vanes to alternate ones of the circumferential grooves in the inner casing;

(c) a plurality of first friction bands;

(d) means to attach the first friction bands in the circumferential grooves between the stator vanes;

(e) an outer casing disposed about the inner casing so as to define an annular space therebetween;

(f) means to direct a portion of the air passing through the compressor into the annular space between the inner and outer casings;

(g) a plurality of first brackets attached to the exterior surface of each arcuate segment of the inner casing, each of the first brackets defining an opening therethrough with its axis extending generally parallel to the longitudinal axis of the compressor, at least one bracket on each arcuate segment being longitudinally aligned with a bracket on an adjacent arcuate segment;

(h) a plurality of second brackets distributed about an interior surface of the outer casing, each of the second brackets defining an opening therethrough, the openings defined by the second brackets being adjacent and aligned with corresponding openings defined by the first brackets; and,

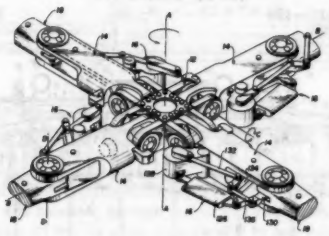
(i) pin means inserted through the aligned openings of the first and second brackets to retain the inner and outer casings in assembled relationship and to attach adjacent arcuate segments together.

4,543,040

HELICOPTER ROTOR SYSTEM

Francis H. McArdle, Norristown, and Earl Schneider, Havertown, both of Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1982, Ser. No. 429,365
Int. Cl.[4] B64C *27/48, 27/38*
U.S. Cl. 416—134 A **39 Claims**



1. A rotor system for a helicopter, comprising:

a rotor hub including a plurality of lug pairs partly defined by a plurality of composite closed loop straps, each lug pair partly defining a flap hinge;

a plurality of rotor blades, equal in number to the pairs of lugs; and

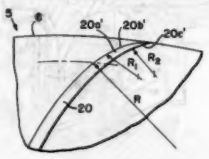
a plurality of rotor blade attachment means, one for each rotor blade, for attaching a respective rotor blade to the rotor hub at a respective pair of lugs, each rotor blade attachment means further defining with an associated lug pair the flap hinge partly defined by said lug pair.

4,543,041

IMPELLOR FOR CENTRIFUGAL COMPRESSOR

Pierre B. French, and Paul J. Langdon, both of West Yorkshire, England, assignors to Holset Engineering Company Limited, Turnbridge, England

Continuation of Ser. No. 405,574, Aug. 5, 1982, abandoned. This application Jan. 10, 1985, Ser. No. 690,419
Claims priority, application United Kingdom, Aug. 13, 1981, 8124143
Int. Cl.[4] F04D *17/10*
U.S. Cl. 416—183 **5 Claims**



1. An impeller for a centrifugal compressor, said impeller comprising:

an annular disc portion having a front face and a rear face;

an integral coaxial hub portion rotatable about a central axis; and

a plurality of blades mounted on the front face of the disc portion and on the hub portion, each blade having a leading and trailing surface;

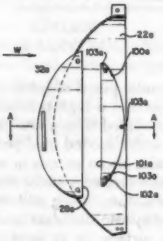
each of said blades having an inlet portion for substantially axial entry of fluid and a tip portion for substantially radial movement of fluid as viewed in a plane containing the central axis of said impeller, the leading surface of the tip portion curving in a direction away from the direction of tip portion movement as viewed in a plane perpendicular to the central axis of said impeller, the radius of curvature of said leading surface uniformly decreasing to a minimum radius of curvature at the outer end of said blade that is less than any curvature radially inward from said tip portion.

4,543,042

WINDMILL ROTOR

Heinz Lange, P.O. Box 1374, Merritt, British Columbia, Canada

Filed Oct. 29, 1984, Ser. No. 666,185
Int. Cl.[4] F03D *3/06*
U.S. Cl. 416—197 A **8 Claims**



1. In a windmill rotor for obtaining energy from wind, having a plurality of at least three plate-like main blades connected symmetrically around a shaft, each main blade bowing outwardly so that said main blades collectively define a generally sphere-like chamber, and each main blade having a plate-like secondary blade mounted on its inner surface defining a gap between the main and secondary blades and having a gap entrance and a gap exit, each said secondary blade being mov-

able relative to the main blade under centrifugal force between a first position occupied at rest or at low rotational speeds and having a wide gap entrance and a narrow gap exit and a second position occupied at high rotational speeds and having a narrow or substantially closed gap entrance; the improvement which comprises a plate-like auxiliary blade mounted on the inner surface of each main blade adjacent to and ahead of said secondary blade in the direction of rotation, said auxiliary blade defining with said main blade a scoop for receiving said wind and deriving thrust therefrom, said scoop having an entrance at the trailing edge of the auxiliary blade and an exit at the leading edge of the auxiliary blade, said scoop entrance being wider than said scoop exit and being substantially no wider than said gap exit when said secondary blade is in its second position.

4,543,043

VARIABLE DISPLACEMENT COMPRESSOR

Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 404,078, Aug. 2, 1982, Pat. No. 4,475,871. This application May 24, 1984, Ser. No. 613,692

Int. Cl.⁴ F04B *1/26*

U.S. Cl. 417—222 **1 Claim**

1. An axial piston, variable displacement, wobble plate compressor with a plurality of gas working spaces and corresponding plurality of pistons, each positioned in one of said spaces, a drive shaft having a central, cylindrical portion disposed along a longitudinal axis, at least one thrust flange member extending radially from said cylindrical portion and defining a shoulder at the junction with said cylindrical portion, a hinge ball defining a bore to receive the drive shaft and be slidable thereon, a wobble plate and hub assembly with said hinge ball mounted in said hub which hub defines a pin bore and counterbore, means operably connected between said wobble plate and pistons to impart reciprocating drive to said pistons, said compressor stroke being responsive to pressure differentials across said pistons between an inoperative mode and a range of operative modes,

wherein the improvement comprises a positive stop pin mounted in said pin bore and counterbore and a piston-stroke-decreasing spring mounted on said drive shaft between said hinge ball and said shoulder at the junction of said thrust flange member and the cylindrical portion of said drive shaft, said stop pin maintaining said wobble plate and hinge ball assembly at about 0.100 inch piston stroke in an inoperative mode of said compressor, said piston-stroke-decreasing spring acting as the sole bias means on said hinge ball during the inoperative mode with the exception of said pressure differential across said pistons.

4,543,044

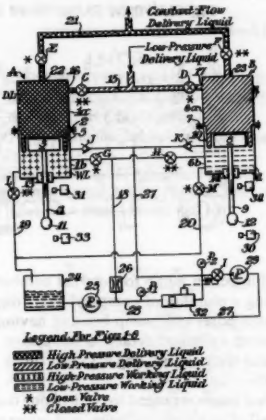
CONSTANT-FLOW-RATE DUAL-UNIT PUMP

Walter J. Simmons, Martinsburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 9, 1983, Ser. No. 550,186

Int. Cl.⁴ F04B *35/02*

U.S. Cl. 417—342 **6 Claims**



1. In a dual-unit pump for pumping a high-viscosity slurry wherein each unit has a housing divided by a sealing means into a variable-volume working-liquid chamber and a complementary variable-volume delivery-liquid (product) chamber, wherein product is discharged from one of said units while the other unit is being filled with product, wherein the discharge of product is alternately switched from one of said units to the other, and wherein said sealing means comprises a piston slidably mounted in said housing and a rolling diaphragm peripherally attached to said housing and centrally attached to the piston head so as to form a flexible, frictionless seal between said working and delivery liquids, the improvement comprising

(a) means for controlling the flow of liquids to and from said chambers in a manner such that delivery liquid is admitted to one of said housings, and working liquid discharged therefrom (filling cycle), while working liquid is being admitted to, and delivery liquid discharged from, the other (discharge cycle) at rates such that the filling cycle in one of said housings is completed before the discharge cycle is completed in the other, said flow control means being adapted to be activated so as to alternately switch the flow of delivery and working liquids to and from said housings from one housing to the other with essentially no volume change in the liquid flow lines;

(b) sensing means for detecting a liquid pressure differential in said two housings at the end of the filling cycle; and

(c) means for equalizing the liquid pressure in said two housings, said pressure-equalizing means (1) deriving its energy from a source which is independent of the source from which the energy for admitting said working liquid to said housings is derived, (2) being activated in response to the detection of a pressure differential by said sensing means, and (3) being adapted to complete the pressure equalization before the liquid flow control means are activated to switch the flow of delivery and working liquids to and from said housings from one housing to the other.

4,543,045

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

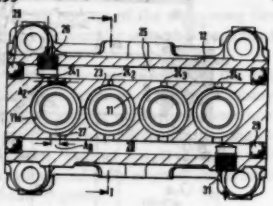
Ernst Ritter, Stuttgart; Reinhard Schwartz, Stuttgart-Sillenbuch, and Johann Warga, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 1, 1984, Ser. No. 616,447

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326045

Int. Cl.[4] F02M *59/26, 59/44*

U.S. Cl. 417—499 20 Claims



1. A fuel injection pump for internal combustion engines, comprising a plurality of pump cylinders disposed in line in reception bores of a pump housing having a top, each of said pump cylinders arranged to receive a pump piston provided with control edges to determine the duration of injection;

said control edges arranged to control one overflow opening in a wall of said pump cylinder, said pump cylinder further being surrounded in the vicinity of said at least one overflow opening by a partial suction chamber;

said partial suction chamber having an inlet conduit arranged to supply fuel thereto and said conduit arranged to extend in a longitudinal direction of said pump housing,

each said partial suction chamber having a separate return-flow conduit connected via return-flow openings, wherein each return-flow opening has a flow-through cross section (A_R) that is smaller than the cross section of said return-flow conduit,

and wherein each of said partial suction chambers is embodied as a hollow space which completely surrounds the pump cylinder and communicates with the return-flow conduit only via the return-flow opening and with said inlet conduit only via a throttled inlet opening.

4,543,046

ROTARY COMPRESSOR

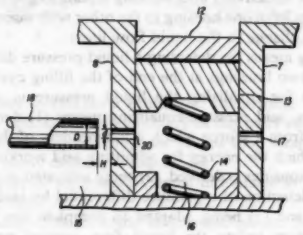
Masumi Hasegawa, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 27, 1980, Ser. No. 181,857

Claims priority, application Japan, Aug. 27, 1979, 54-108821

Int. Cl.[4] F04C *18/00, 29/02;* F04B *39/02, 23/04*

U.S. Cl. 418—63 1 Claim



1. A horizontal type rotary compressor comprising:

a hermetic casing with bottom portion thereof defining a lubricant reservoir;

a motor part comprising a stator fixedly disposed on the inner wall of said hermetic casing;

a rotor rotatably arranged in a spaced and concentric relationship with said stator, and

a rotational shaft connected with said rotor and extending horizontally along said hermetic casing;

a compressor part connected to said motor part by means of said rotational shaft and comprising

an eccentric member integrally formed with said rotational shaft at the opposite end from said motor, bearing members provided at both sides of said eccentric member for supporting the rotational movement of said shaft, said bearing members having a suction aperture and a discharge aperture in communication with said lubricant reservoir for allowing lubricant to pass therethrough, said discharge aperture having a first diameter,

an annular member concentrically and rotatably surrounding said eccentric member and placed between said bearing members,

a cylinder for defining a compression chamber together with said annular member and said set of bearing members,

a blade extending radially through said cylinder, having one end in contact with said annular member and another end urged by a spring member, said blade dividing said compression chamber into a high pressure compartment and a low pressure compartment; and

a pipe member having a second internal diameter larger than said first diameter, said pipe member further having one end in communication with said discharge aperture of one of said bearing members, but being spaced therefrom to define an opening therebetween, and another end in communication with a lubricant path leading to where machine contacts exist, wherein

said blade and said bearings define a blade chamber whereby said blade due to the reciprocal movement thereof sucks lubricant through said suction aperture into said blade chamber and discharges lubricant from said blade chamber through said discharge aperture into said lubricant pipe member and as lubricant passes through said opening it induces ambient lubricant into said pipe thereby supplying lubricant to said lubricant path while substantially prohibiting the reverse flow of lubricant back into said blade chamber.

4,543,047

ROTARY COMPRESSOR

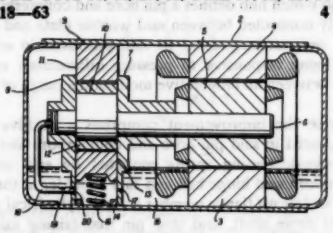
Masumi Hasegawa, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 181,857, Aug. 27, 1980,. This application Apr. 6, 1982, Ser. No. 365,960

Claims priority, application Japan, Aug. 27, 1979, 49-108821

Int. Cl.[4] F04C *18/00, 29/02;* F04B *39/02, 23/04*

U.S. Cl. 418—63 4 Claims



1. A horizontal type rotary compressor comprising:

a hermetic casing with bottom portion thereof defining a lubricant reservoir;

a motor part comprising a stator fixedly disposed on the inner wall of said hermetic casing;

a rotor rotatably arranged in a spaced concentric relationship with said stator, and

a rotational shaft connected with said rotor and extending horizontally along said hermetic casing;

a compressor part connected to said motor part by means of said rotational shaft and comprising

an eccentric member integrally formed with said rotational shaft at the opposite end from said motor, bearing members provided at both sides of said eccentric member for supporting the rotational movement of said shaft, said bearing members having first and second apertures in communication with said lubricant reservoir for allowing lubricant to pass therethrough, said second aperture having a first diameter,

an annular member concentrically and rotatably surrounding said eccentric member and placed between said bearing members,

a cylinder for defining a compression chamber together with said annular member and said set of bearing members,

a blade extending radially through said cylinder, having one end in contact with said annular member and another end urged by a spring member, said blade dividing said compression chamber into a high pressure compartment and a low pressure compartment; and

a pipe member having a second internal diameter larger than said first diameter, said pipe member further having one end in communication with said second aperture of one of said bearing members and another end in communication with a lubricant path leading to where machine contacts exist, said pipe member further having an opening near said second aperture of said one of said bearing members, wherein

said blade and said bearings define a blade chamber whereby said blade due to the reciprocal movement thereof sucks lubricant through said first aperture into said blade chamber and discharges lubricant from said blade chamber through said second aperture into said lubricant pipe member and as lubricant passes said opening it induces ambient lubricant into said pipe thereby supplying lubricant to said lubricant path while substantially prohibiting the reverse flow of lubricant back into said blade chamber.

4,543,048

STEPPED-DISC PUMP

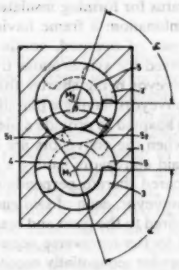
Dietrich Deusch, Am Gansberg 14, 5206 Neunkirchen-Seelscheid 2, Fed. Rep. of Germany

Filed May 23, 1984, Ser. No. 612,982

Claims priority, application Fed. Rep. of Germany, May 25, 1983, 3318859; Jun. 29, 1983, 3323327

Int. Cl.⁴ F04C *2/00, 18/00*

U.S. Cl. 418—191 **2 Claims**



1. A stepped disc pump comprising a casing, at least two mutually engaging rotors, each of which is mounted on a shaft, means for rotating said rotors at the same speed in opposite directions, each of said rotors having stepped discs arranged in a row on the shaft and each having only one engagement segment, adjacent stepped discs being in each case mutually offset by a defined angle and being constructed and arranged in such a way that, together with with said casing, they form closed delivery chambers, the offset angle α is equal to the angle β which is obtained by connecting the points of intersection (S_1,S_2) of the envelope circles of said rotors (2,3) to the centers (M_1,M_2) thereof, and that the offset angle α is equal to 360°/n, n being an integer greater than three.

4,543,049

VANE COMPRESSOR WITH MEANS FOR OBTAINING SUFFICIENT BACK PRESSURE UPON VANES AT THE START OF COMPRESSOR

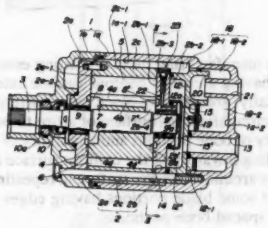
Tsunenori Shibuya, Saitama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1984, Ser. No. 666,968

Claims priority, application Japan, Nov. 4, 1983, 58-207238

Int. Cl.⁴ F04C *18/00, 29/10*

U.S. Cl. 418—269 **5 Claims**



1. A vane compressor comprising: a pump housing having an endless inner peripheral camming surface, said pump housing including a front side block and a rear side block disposed at opposite ends thereof, at least one of said front and rear side blocks having a through hole axially formed therein; a rotor rotatably fitted within said pump housing, said rotor having an outer peripheral surface formed therein with a plurality of slits, and defining therein a back pressure chamber communicating with said slits; a plurality of vanes slidably fitted in said slits of said rotor for sliding contact with said endless inner peripheral camming surface of said pump housing; a rotary shaft having a portion thereof disposed within said pump housing and drivingly supporting said rotor fitted thereon, said rotary shaft being fitted in said through hole of said at least one of said front and rear side blocks; a compressor casing accommodating said pump housing and cooperating therewith to define a discharge pressure chamber therebetween; at least one radial roller bearing arranged in said through hole of said at least one of said front and rear side blocks and rotatably supporting said rotary shaft fitted in said through hole; partition means cooperating with one end face of said at least one of said front and rear side blocks remote from said rotor to define a sealing chamber therebetween, said through hole opening into said sealing chamber; communication means communicating said through hole with said back pressure chamber in said rotor; passage means formed in said pump housing and communicating said discharge pressure chamber with said sealing chamber; and valve means arranged in said passage means and operable to open at a value of the difference in pressure between said discharge pressure chamber and said back pressure chamber below a predetermined value to establish communication between said discharge pressure chamber and said sealing chamber, and to close at a value of the difference in pressure above said predetermined value to interrupt the communication between said discharge pressure chamber and said sealing chamber.

4,543,050

TIRE MANUFACTURING MOLD

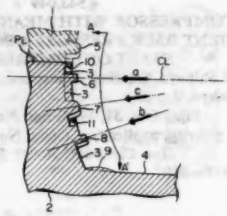
Kenichi Takahashi, Kodaira; Koichi Hirano, Akigawa, and Shoji Futamura, Kawasaki, all of Japan, assignors to Bridgestone Tire Co. Ltd. and Institute of Technology Precision Electrical Discharge Works, both of, Japan

Continuation of Ser. No. 247,280, Mar. 25, 1981, abandoned. This application Jun. 1, 1983, Ser. No. 499,913

Claims priority, application Japan, Apr. 4, 1980, 55-44395

Int. Cl.[4] B29H *5/02*

U.S. Cl. 425—28 D 4 Claims



1. A tire manufacturing mold consisting essentially of:

a block having a curved contour surface extending circumferentially around the block and corresponding to an outer circumferential surface of a tire to be molded;

a plurality of bone portions and a plurality of blade portions extending inwardly of the contour surface and circumferentially around a contour surface in repeating pattern with at least some blade portions having edges connected between spaced bone portions;

the blade portions protruding essentially normally to the contour surface;

each of the blade and bone portions being made as one unitary body with the block and formed by discharge machining the block in relief in a plurality of repeating arc sections around the contour surface of the block;

there being no vertical gaps between edges of any blade and any bone portion, there being no gaps between any blade and the contour surface and there being no gaps between any bone and the contour surface;

the blade portions each having a thickness of less than 1.5 mm and a height of more than 2 mm at at least one portion in a height direction thereof away from the contour surface; and

at least some of the bone portions and the blade portions extending at a predetermined angle to the contour surface so that they contact the contour surface at a line contact with substantially no curved transition area between the at least some bone and blade portions and the contour surface.

4,543,051

SIZING DEVICE FOR EXTRUDED PLASTIC TUBING

Charles E. Maillefer, Buchillon, Switzerland, assignor to Maillefer S.A., Ecublens, Switzerland

Filed Dec. 14, 1982, Ser. No. 449,787

Claims priority, application Switzerland, Dec. 21, 1981, 8165/81

Int. Cl.[4] B29D *23/04;* B29F *3/08*

U.S. Cl. 425—71 9 Claims

1. A device for sizing tubing of plastic material produced by extrusion, said device comprising:

a vat containing a liquid coolant,

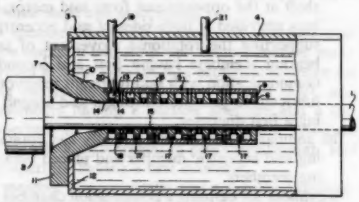
a sleeve having a cooling and sizing portion disposed in said vat within said coolant,

a passage extending longitudinally through said portion of said sleeve,

first conduit means within said portion of said sleeve for supplying further liquid coolant to said passage, and

second conduit means within said portion of said sleeve for sucking said further liquid coolant from said passage,

said passage being defined by a smooth inside surface of said portion of said sleeve having a constant tubular cross-sectional shape and matching the cross-sectional shape and area of said tubing,



said first and second conduit means respectively comprising first and second individual radial ducts which open directly into said smooth inside surface, said first radial ducts having predetermined length and diameter, and said first and second radial ducts being alternatingly longitudinally distributed along said portion of said sleeve to maintain a continuous film of said further liquid coolant between said smooth inside surface and said tubing.

4,543,052

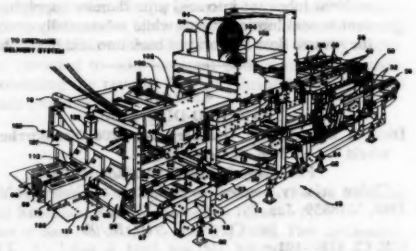
APPARATUS FOR INSULATED BUILDING BLOCK

Garry B. Stevens, 26 Welsford Gardens, Ste. 403, Don Mills, Ontario, Canada (M3A 2P5)

Filed Aug. 21, 1984, Ser. No. 642,848

Int. Cl.[4] B29C *27/30;* B28B *1/00*

U.S. Cl. 425—110 10 Claims



1. An apparatus for forming insulated concrete blocks comprising, in combination: a frame having an inlet end and an outlet end; a pair of opposed, continuous, upper and lower conveyors indexed for synchronous travel within said frame, said upper conveyor being shorter than the lower conveyor; each of said conveyors having a plurality of transverse, articulated segments adapted to provide a planar surface in its operative position when the conveyors are opposed to each other; the lower of said conveyors having a plurality of equispaced end frames secured thereto perpendicular to the direction of travel of the conveyor, each of said end frames having a resilient former secured to the front and rear faces thereof; forming plates secured to the transverse segments of the upper and lower conveyors for sequentially receiving a plurality of laterally-spaced concrete blocks therebetween defining at least one cavity between said blocks; a foam delivery system for forming insulating foam in situ in said cavity; means for feeding a continuous strip of impermeable film to said conveyors for enclosing the cavities and interposing an impermeable barrier between the foam and the conveyors; and lateral containment

wheels mounted on each side of the frame for providing lateral support to the blocks as they are formed.

4,543,053

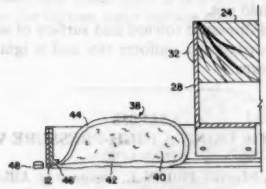
TOOL FOR FORMING A FOLDED PASTRY

Henry E. Jasniewski, 5042 N. Parkside, Chicago, Ill. 60630

Continuation-in-part of Ser. No. 340,273, Jan. 18, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 583,682

Int. Cl.⁴ A21C *11/10*; **B26B** *27/00*; **B29C** *27/00, 15/00*

U.S. Cl. 425—289 **10 Claims**



1. An apparatus for forming a folded pastry from rolled-out dough, comprising:

a frame having an edge for cutting the dough, said cutting edge formed in the shape of the peripheral outline of a pair of circles intersecting at two points, the two points of intersection defining a line for folding the dough to form said pastry.

4,543,054

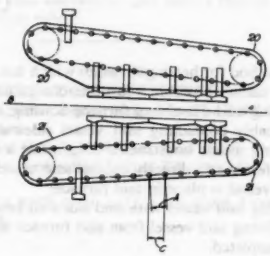
THERMOFORMING MACHINE

Wolfram E. R. Bogwitz; Anthony E. Flecknoe-Brown, and Naum Duchovni, all of Melbourne, Australia, assignors to Hitek Limited, Victoria, Australia

Filed May 25, 1984, Ser. No. 614,098

Int. Cl.⁴ B29C *17/02*

U.S. Cl. 425—335 **7 Claims**



1. A machine for continuously thermoforming a sheet of heat-softened thermoplastic material wherein two opposed and spaced successions of continuously circulatable tooling steps converge at an entry throat for said sheet to move said sheet from the throat through a dwell section in which the tooling steps move in opposed parallel relationship to a product removal section in which the tooling steps diverge and the formed product is removed from the machine, the said tooling steps being of sufficient widths to carry two or more rows of tools extending across the direction of sheet movement and said tooling steps while in contact with the sheet in the throat being operatively associated with means acting simultaneously to constrain the tooling steps (i) to remain in parallel alignment of the direction of sheet movement through the dwell section, (ii) to apply thrust in opposed directions normal to said direction of sheet movement, and (iii) to maintain opposed tooling steps in alignment relative to each other in the direction of sheet movement, characterised in that driving mechanisms incorporating a drive sprocket and controlling the movement of each opposed succession of tooling steps are interrelated so as to maintain said tooling steps in precise synchronism with each other irrespective of any minor variation in speed arising from cosine error in the drive sprocket.

4,543,055

METHOD OF CONTROLLING THE FUEL SUPPLY AND BURNER FOR LIQUID FUEL

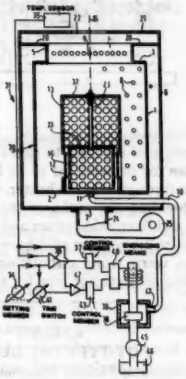
Adolphe J. G. Tilly, Hoofddorp, Netherlands, assignor to Conma, N.V., Willemstad, Netherlands Antilles

Filed Jan. 3, 1984, Ser. No. 567,513

Claims priority, application Netherlands, Jan. 5, 1983, 8300028

Int. Cl.⁴ F23N *5/00*

U.S. Cl. 431—12 **7 Claims**



1. A method of controlling the supply of fuel to a burner so as to achieve a desired temperature of operation thereof, which comprises the steps of:

(a) pumping liquid fuel to the burner at an initial pulsed pumping rate which is of a set frequency and at a set duration during each cycle of said set frequency corresponding to an expected heat content and expected viscosity of the liquid fuel;

(b) maintaining said set duration of pumping during an initial period of time and varying the frequency of pumping from said set frequency during said initial period of time in response to deviation of the temperature of operation from said desired temperature of operation; and then

(c) varying the duration of pumping during each cycle of the frequency of pumping attained in step (b) from said set duration of pumping in response to deviation of the temperature of operation from said desired temperature after said initial period of time, whereby said desired temperature of operation is attained despite deviation in heat content and viscosity of the fuel from said expected heat content and expected viscosity.

4,543,056

SAFETY DEVICE FOR FAN HEATER

Kuniyoshi Sakakibara, Handa, Japan, assignor to Rinnai Corporation, Nagoya, Japan

Continuation of Ser. No. 332,643, Dec. 21, 1981, abandoned. This application Dec. 6, 1984, Ser. No. 678,951

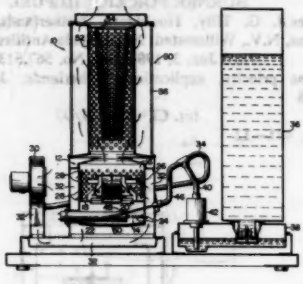
Claims priority, application Japan, Feb. 3, 1981, 56-15265

Int. Cl.⁴ F23N *5/00*

U.S. Cl. 431—76 **2 Claims**

1. In a safety device for a fan heater said fan heater including a burner utilizing a flame to burn gas and having a safety valve

in a gas supply pipe said safety valve being capable of both permitting gas to flow to said burner and shutting off the flow of gas to said burner, a detector pipe disposed at least partially in the combustion products flow path of said flame, said detector pipe having an inlet into which said combustion products from the burner are drawn and an outlet from which said combustion products emerge, a first portion of an oxygen density cell in the detector pipe, and a second portion of said



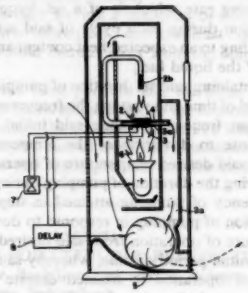
oxygen density cell exposed to said flame, and a warm wind circulating fan for drawing air to be heated and said combustion products through said fan heater, the improvement including means shielding the outlet of the detector pipe from the inlet thereof and from said burner and for directing burned gas from said outlet away from said burner and into communication with the warm wind circulating fan to forceably draw burned gas into the detector pipe for stable flow therethrough.

4,543,057

POT-TYPE OIL BURNER

Kazuharu Nakamura; Motoki Matsumoto, and Tooru Yoshino, all of Aichi, Japan, assignors to Toyotomi Kogyo Co., Ltd., Aichi, Japan

Filed May 3, 1983, Ser. No. 491,131
Int. Cl.[4] F23D *11/02, 11/44*
U.S. Cl. 431—208 **14 Claims**



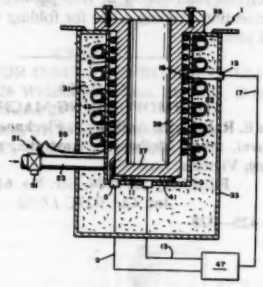
1. A pot-type oil burner comprising:
- a pot for carrying out therein not only the vaporization and mixing, but also the ignition and combustion of fuel oil supplied thereto;
- air supply means for supplying air to said pot;
- oil supply means for supplying fuel oil to said pot;
- an air pipe for introducing at least a part of the air flowing through said air supply means therethrough to said pot;
- an oil pipe for introducing fuel oil from said oil supply means therethrough to said pot;
- a fabric formed of a heat-resistant, oil absorbent fiber and spread on the bottom surface of said pot;
- heating means arranged in said pot immediately above said fabric for heating the interior of said pot and said fabric to a temperature sufficient not only to vaporize and mix, but also to ignite and combust therein, fuel oil supplied to said pot, said heating means being positioned sufficiently close to said fabric to cause ignition and burning of fuel oil vaporized by said fabric; and
- a nozzle means connected with said oil pipe for ejecting fuel oil into said pot, said nozzle means being positioned with respect to said air pipe so that said fuel oil is dispersed in the form of fine particles toward substantially the entire surface of said fabric by means of air supplied from said air pipe into said pot,
- whereby fuel dispersed toward said surface of said fabric is stably vaporized at a uniform rate and is ignited by said heating means.

4,543,058

METHOD OF USING A HIGH-PRESSURE VESSEL FURNACE

Peter Petersen, Murray Hill, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 470,739, Feb. 28, 1983, Pat. No. 4,502,531. This application Oct. 19, 1984, Ser. No. 662,915
Int. Cl.[4] F27D *3/00, 7/00*
U.S. Cl. 432—9 **12 Claims**



1. A method for heating a vessel, which has a bottom and at least one sidewall, within a furnace, comprising the steps of:
- a. placing said vessel in a furnace housing;
- b. slideably contacting said vessel sidewall with sidewall heating means constructed to provide a resilient, sliding interference fit directly against said vessel sidewall when said vessel is place in said furnace;
- c. heating said vessel with said sidewall heating means; and
- d. removing said vessel from said furnace after said heating is completed.

4,543,059

SLOTTED CANTILEVER DIFFUSION TUBE SYSTEM AND METHOD AND APPARATUS FOR LOADING

J. S. Whang, Scottsdale, and Andrew F. Wollmann, Chandler, both of Ariz., assignors to Quartz Engineering & Materials, Inc., Tempe, Ariz.

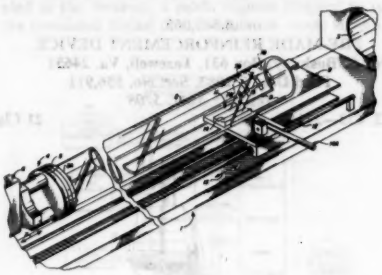
Filed Jul. 18, 1984, Ser. No. 631,929
Int. Cl.[4] F27D *3/00*; F27B *9/14, 5/02*; F27D *5/00*
U.S. Cl. 432—11 **27 Claims**

1. An apparatus for effectuating carrying of a plurality of spaced semiconductor wafers into and out of a furnace and also for holding said wafers during a wafer processing operation at elevated temperatures inside said furnace, said apparatus comprising in combination:
- (a) a first tube for holding said wafers therein, said first tube having a first end and an open second end, and a wall, said first tube having an elongated slot in a bottom portion of

said wall, said elongated slot extending from said open second end along said bottom portion of said wall to a portion of said first tube in which wafer boats are to be positioned;

(b) cantilever supporting means attached to said first end of said first tube for effectuating supporting of said first tube in cantilever fashion during insertion and withdrawal of said first tube into and out of said furnace;

(c) a removable first wafer boat supporting at least some of said wafers, said first wafer boat having a bottom surface which covers and seals a portion of said elongated slot when said first wafer boat is positioned inside said first tube on the bottom inner surface thereof;



(d) means for effectuating flow of gas into and out of said first tube, through said plurality of spaced wafers inside said first tube, and out of said tube while said first tube is being moved in and out of said furnace and while said wafers are being held in said furnace;

(e) boat carrying means extendable through said elongated slot for lifting said first wafer boat above the bottom inner surface of said first tube, laterally moving said first wafer boat along the interior of said first tube above said elongated slot without any portion of said first wafer boat, any of said wafers, or any portion of said boat carrying means touching any portion of said first tube, to effectuate transferring said first wafer boat and wafers therein into and out of said first tube.

4,543,060

HEAT TREATMENT OF WORKPIECES

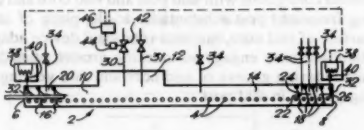
Robert G. Bowes, Kobe, Japan, assignor to The BOC Group plc, London, England

Filed Feb. 8, 1984, Ser. No. 578,386

Claims priority, application United Kingdom, Feb. 10, 1983, 8303673

Int. Cl.⁴ F27B *9/04, 3/22, 5/04;* F26B *3/00*

U.S. Cl. 432—23 **10 Claims**



1. A method of heat treating workpieces in a continuous furnace having an entrance, a thermal treatment region, a cooling region, and an exit and at least one curtain located at said entrance or exit comprising the steps of:

(a) supplying reducing gas or non-oxidizing gas to at least one location in said furnace remote from said curtain to form in said thermal treatment and cooling regions an atmosphere which is essentially reducing or non-oxidizing to said workpieces;

(b) passing said workpieces through the furnace to effect the desired heat treatment with said workpieces disturbing said said curtain upon passage into or from said furnace;

(c) establishing a flow rate of said reducing and non-oxidizing gas at a level when said curtains are not disturbed by passage of said workpieces through said furnace sufficient to maintain a substantially non-oxidizing or reducing atmosphere in said furnace;

(d) detecting disturbance of said curtain by said workpieces; and

(e) increasing the flow rate of said gas upon detecting a disturbance of said curtain such that the atmosphere in said cooling and thermal treatment regions of said furnace is maintained substantially reducing or non-oxidizing.

4,543,061

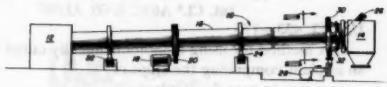
AIR COOLED ROTARY KILN FEED END DAM

Don L. Edwards, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Apr. 2, 1984, Ser. No. 595,900

Int. Cl.⁴ F27B *7/24, 7/38, 7/28*

U.S. Cl. 432—115 **2 Claims**



1. In a rotary kiln comprised of a refractory lined inclined generally horizontal rotating cylinder having a discharge end and a feed end, wherein said feed end includes a refractory lined dam section of reduced diameter which extends into a stationary feed end housing and which prevents material fed to said feed end from backing up into said feed end housing, wherein a sealing mechanism is provided between said feed end dam section and said feed end housing, and wherein said feed end includes an annulus between said dam section and said sealing mechanism, the improvement wherein:

(a) said feed end section comprises an extension member extending from said rotating cylinder first forming said dam section and then extending back over the outside of said dam section to form said annulus, said dam section and at least a part of said extension member extending back over said dam section forming said annulus being refractory lined;

(b) cooling means comprising forced air means, an air distribution ring and a plurality of nozzles directed into said annulus are provided;

(c) a plurality of support baffles within said annulus are provided, said support baffles extending inwardly from the outer portion of said annulus; and

(d) flow passage means at the inner portion of said baffles are provided.

4,543,062

DENTAL APPARATUS AND METHOD OF USE

Robert L. Lee, 22937 Grand Terrace Rd., Colton, Calif. 92324

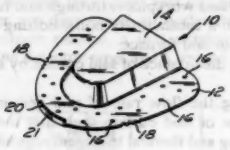
Filed Feb. 14, 1984, Ser. No. 580,071

Int. Cl.⁴ A61C *9/00*

U.S. Cl. 433—71 **13 Claims**

1. A dental check bite element for making a record of a patient's bite, such record facilitating the mounting od dental prosthesis in a dental articulator, said element comprising a tray shaped to fit within a person's mouth between the upper and lower jaws, the tray including a generally thin, U-shaped bite section to be positioned between the upper and lower teeth, and including a raised central arch within the U-shaped bite section to fit within the arch of the person's upper jaw, the tray bite section being made of stiff material which is deformable when clamped between the person's upper and lower teeth in the bite section; the central forward portion of the bite

section including a short upwardly extending flange on the anterior edge; and means formed on the lateral edges of said



tray to facilitate gripping the tray when inserting or removing the tray from a patient's mouth.

4,543,063

ELASTOMERIC IMPRESSION MATERIAL FOR TOOTH AND SUPPORTING STRUCTURE DUPLICATION

Howard Cohen, 2791 W. 5th St., Brooklyn, N.Y.

Division of Ser. No. 346,570, Feb. 8, 1982, Pat. No. 4,468,202.
This application Aug. 27, 1984, Ser. No. 644,731
Int. Cl.[4] A61C *8/00, 13/00*
U.S. Cl. 433—175 **2 Claims**

1. A method for using a photochemically cured elastomer as an implant comprising the steps of:
   exposing an area for implant;
   applying and positioning a photochemically curable elastomeric material to said exposed area;
   applying sufficient pressure to seat and mold the elastomeric material at the desired position in a desired size and shape; and
   curing the elastomeric material using a light source.

4,543,064

DENTAL BRIDGE

Ehrenfried G. B. Wolf, Rte. 1, Box 143 A, Raymond, Wash. 98577

Filed Apr. 14, 1980, Ser. No. 139,788
Int. Cl.[4] A61C *13/08*
U.S. Cl. 433—208 **5 Claims**

1. A combination of a false tooth and a positioning stand:
   a. said false tooth comprising:
      I. a metal base;
      II. an overlay overlying most of said metal base to simulate a natural tooth;
      III. an attaching means connecting with the rear of said metal base;
   b. said positioning stand comprising:
      I. a support;
      II. a slot in said support;
      III. said slot being capable of receiving and positioning an attaching means connecting with the rear of a metal base for a false tooth;
   c. wherein said attaching means is positioned in said slot to position said tooth; and, d. Said support being capable of being heated to a temperature sufficiently high to fuse a porcelain overlay to said metal base to make a false tooth.

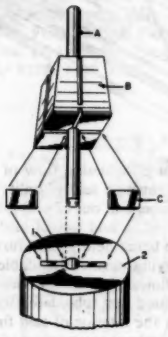
2. A process for making a dental bridge, said process comprising:
   a. preparing a plurality of false teeth having a metal base and an attaching means connecting with the rear of the metal base;
   b. working, if necessary, said false tooth to the desired configuration;
   c. forming a solder matrix to include said attaching means and to position said teeth;
   d. uniting the metal base of the teeth;
   e. removing the excess solder matrix;
   f. removing the attaching means.

4,543,065

PRE-MADE REINFORCEMENT DEVICE

Geoffrey C. Bushway, Box 631, Tazewell, Va. 24651

Filed Dec. 1, 1983, Ser. No. 556,911
Int. Cl.[4] A61C *5/08*
U.S. Cl. 433—221 **21 Claims**



1. A reinforcement device for preventing rotation of a tooth crown, the tooth crown being connected to a root-canal-treated tooth having a post-hole with a central hole and two indexing grooves intersecting said central hole at an upper surface extending from said central hole, said device comprising:
   an elongated post with at least one venting-indexing groove defined by said post, said post adapted to be seated within a post-hole of a root-canal-treated tooth;
   a core acting as a retention vehicle for a tooth crown, said core defining a central hole and at least one indexing groove intersecting said central hole, said central hole of said core adapted to fit around said post and said core adapted to receive a prosthetic crown; and
   at least one horizontal plane anti-rotational device positioned contiguous with said post and said core and extending from said post substantially to the plane of an outer surface of said core, said anti-rotational device adapted to simultaneously engage an indexing groove of said tooth, said indexing groove of said core and said venting-indexing groove in said post.

4,543,066

DIGITAL TRANSMITTER SIMULATOR

Donald M. French, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1984, Ser. No. 595,213
Int. Cl.[4] G09B *9/00;* **H04L** *7/04*
U.S. Cl. 434—242 **6 Claims**

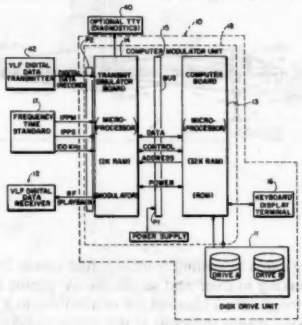
1. A digital transmit simulator for generating shift key modulated very low frequency signals for performance testing of at least one receiver comprising:

means in the form of at least one readily changeable floppy disk for storing digital data representative of a modulation sequence and modulation mode used to test the receiver;

means coupled to the digital data storing means for translating the stored digital data to compatible digital data modulation sequence signals and digital data modulation mode signals;

means for providing inputs from a frequency standard for synchronization purposes;

means coupled to the frequency standard providing means, the receiver and the translating means for generating shift keying modulated signals, the generating means including a modulator having a plurality of modulation modes coupled to the receiver, a mode register coupled to receive the translated digital data modulation mode signals from



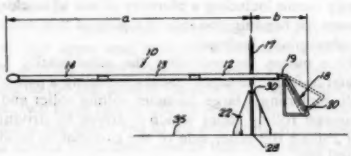
the translating means to create a selected actuation signal to initiate the modulator in a particular modulation mode and a data transition circuit coupled to the modulator to provide updated digital data to the translated data modulation sequence signals, the transition circuit including a static RAM having an operating instruction section responsive to operating instructions received from the translating means to provide actuating signals and an A memory and a B memory each responsive to information signals from the translating means to be alternately enabled to pass the information signals to the modulator and the data transition circuit also includes a universal shift register interposed between the static RAM and the modulator for feeding the information signals alternately from the A and B memories in a timed sequence according to a data clock rate signal coming from the modulator.

4,543,067

AMUSEMENT DEVICE

Milton A. Wallen, 2055 N. New Hampshire, Los Angeles, Calif. 90027

Filed Aug. 6, 1984, Ser. No. 637,830
Int. Cl.[4] G09B *23/06*
U.S. Cl. 434—300 **1 Claim**



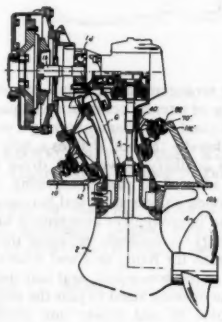
1. An amusement device comprising a base presenting an elevated horizontal surface, a sectional tubular structure having connector means between the sections thereof for adjustably varying the length of said structure, means for supporting said tubular structure upon said base comprising a pointed pivot member carried by said tubular structure and extending normal to the axis thereof at a position adjacent one end thereof, and means for counter-balancing said tubular structure with respect to said pivot member comprising a counterweight depending a distance less than the elevation of said horizontal surface from the end of said tubular structure adjacent said pivot member, and means for adjustably varying the distance between said counter-weight and said pivot member.

4,543,068

INBOARD OUTBOARD DRIVE AND MOUNTING THEREFOR

Lennart Brandt, Fjärås, and Heinz Pichl, Upsala, both of Sweden, assignors to Ab Volvo Penta, Gothenburg, Sweden

Filed Jan. 28, 1983, Ser. No. 461,962
Claims priority, application Sweden, Feb. 3, 1982, 8200604
Int. Cl.[4] B63H *5/12*
U.S. Cl. 440—53 **21 Claims**



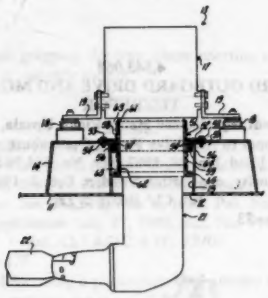
1. An inboard outboard drive for use in a boat having a hull with an opening therein, comprising an engine mounted inboard in the hull and structural means including a housing which passes through said opening with a peripheral space for free motion, a lower unit located at least partially outboard, a lower angular gear box on the lower portion of said lower unit, a propeller mounted for rotation on the lower portion of said lower unit and power transmission drive train means between the engine and propeller which includes said lower angular gear box for driving said propeller; an annular resilient element extending around said housing and the periphery of said opening to seal said peripheral space, mounting means on said hull for supporting said inboard outboard drive on said hull including first engaging means on said housing and second engaging means on said hull engaging opposite end of the height of the profile of said resilient element which has a profile which owing to the relation of its height to the thickness transverse to the height prevents buckling out or collapse, and providing a force on said inboard outboard drive to constantly subject said resilient element to a compressing force to close any crack in said resilient element to prevent or reduce leakage, said housing being a portion of said lower unit having said first engaging means, said annular resilient element having an inner periphery mounted on said first engaging means on said lower unit and an outer periphery more forward in the direction of said compressing force mounted on said second engaging means provided by an annular mounting shield affixed and sealed to said resilient element and fixed and sealed to said hull around the opening.

4,543,069

AUXILIARY PROPELLING EQUIPMENT MOUNTING STRUCTURE FOR SAIL BOATS

Yoshiaki Kobayashi, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 362,242, Mar. 26, 1982, abandoned. This application Jun. 8, 1984, Ser. No. 618,760
Claims priority, application Japan, Apr. 16, 1981, 56-58133; May 23, 1981, 56-78229; Aug. 31, 1981, 56-137224
Int. Cl.⁴ B63H *5/00*
U.S. Cl. 440—112 **12 Claims**



1. A sealing arrangement for a hull and an auxiliary power unit comprising an internal combustion engine, a drive housing fixed relative to said engine and carrying a propeller driven by said engine, whereby the hull defines a hole through which a portion of the auxiliary power unit drive housing and said propeller are adapted to pass comprising an elastomer seal adapted to provide an operative seal between the hull and the power unit, the improvement comprising said elastomer seal having a first part for sealingly engaging the area around said hole, fixing means for fixing said seal relative to the hull and independently of the power unit, said seal also having a second part defining an opening sized to pass the power unit for insertion and removal of said power unit portion through said opening while said first part is retained in sealing engagement with the area around said hole by said fixing means, a resilient bellows section interconnnecting said first and second parts, clamping means for detachably affixing said second part in sealing engagement with the power unit portion, a third part spaced from said second part and also defining an opening sized to pass the power unit, and fourth means for detachably affixing the third part in sealing engagement with the power unit.

4,543,070

LINKED-SPAR MOTION-COMPENSATED LIFTING SYSTEM

Ralph A. Olsen, and Robert H. Cuthbertson, both of Santa Barbara, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1984, Ser. No. 657,641
Int. Cl.⁴ B63B *21/52*
U.S. Cl. 441—5 **10 Claims**

1. An improved lifting system for operating a lifting cable over the side of a floating platform in which the pitch and roll of the platform and the motion of the water's surface are decoupled from the lifting cable, said lifting system comprising:

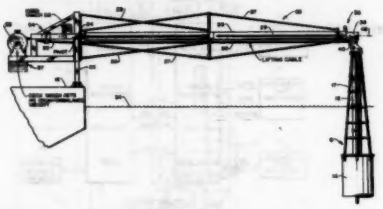
a. a spar buoy having a narrow upper section with a relatively small cross-sectional area and a base section of a relatively large cross-sectional area, said spar buoy having a longitudinal channel for permitting passage of the lifting cable through the spar buoy;

b. rigid boom means having an outboard end and an inboard end, said boom means being mounted to pivot forward of its inboard end on a first axis fixed relative to the deck of the floating platform to allow said boom means to rotate relative to the platform;

c. a connect/disconnect gimbal sheave assembly means having a single sheeve free to rotate on its axle being rotatably and disengagedly coupled to the outboard end of said boom means to allow said gimbal sheave assembly means to rotate about a second axis which is normal to said first axis, said gimbal sheave assembly means also being pivotably coupled to the top of said spar buoy upper section to allow said spar buoy to pivot about an axis normal to the second axis and parallel to the first axis;

d. said single sheave being positioned about said spar buoy so that a lifting cable passing over said single sheave will fall through the longitudinal channel of said spar buoy;

e. a first means disposed at the inboard end of said boom means for letting out and taking in the lifting cable, said



lifting cable extending from said first means for letting out and taking in over said single sheave means and through said longitudinal channel for connection to a payload;

f. a second means disposed at the inboard end of said boom means for letting out or taking in a tension line, said tension line extending from said second means for letting out or taking in along said boom means to the outboard end thereof where it is connected to said connect/disconnect gimbal sheave assembly means; said tension line when let out allowing said gimbal sheave assembly along with said spar buoy to disengage from the end of said boom means; and

g. said tension line when taken in causing said gimbal sheave assembly means and spar buoy to be pulled toward and become engagedly and rotatably coupled to the outboard end of said boom means and secured thereto when said tension line is held in tension.

4,543,071

APPARATUS FOR PRODUCING A MAGNETRON

Hiroya Murakami, and Mitsuhiro Takasaki, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 311,970, Oct. 16, 1981, abandoned. This application Jan. 4, 1984, Ser. No. 568,266
Claims priority, application Japan, Oct. 22, 1980, 55-146826
Int. Cl.⁴ H01J *9/00*
U.S. Cl. 445—66 **3 Claims**

3. An apparatus for producing a magnetron, the apparatus comprising:

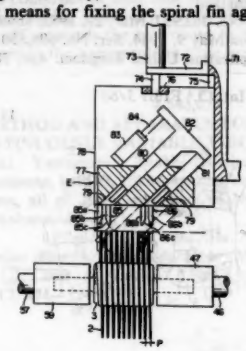
suppoly means including a plurality of sets of working roller means for bending one side of a strip of thin material into a substantially L-shape;

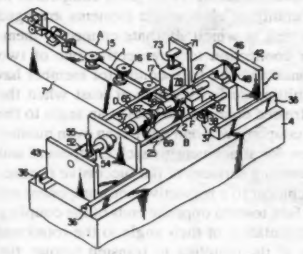
working means for receiving the substantially L-shaped material from the supply means including a pair of rolling rolls including a large diameter rolling roller and a small diameter rolling roller which is driven by driving means for rolling the other side of the material to produce the spiral fin;

holding means for supporting a magnetron body in such a manner that a center axis thereof coincides with center axis of the spiral fin, said holding means moving rotating means for rotating the magnetron body by driving means and moving means for moving the magnetron body in an axial direction;

temporary fixing means for temporarily fixing the fin against the magnetron body by forcing a base of the fin against the magnetron body;

fixing means for fixing the spiral fin against the magnetron





body by fixing an adjacent fin of each of a leading end and a trailing end of the fin wound on the magnetron body; and

cutting means for partially cutting the trailing end of the spiral fin produced by said working means.

4,543,072

TOY WITH PARACHUTE

Günter Migowski, Rothschild-Allee 61, 6000 Frankfurt, Fed. Rep. of Germany (6000)

PCT No. PCT/EP81/00178, § 371 Date Jul. 7, 1982, § 102(e) Date Jul. 7, 1982, PCT Pub. No. WO82/01660, PCT Pub. Date May 27, 1982

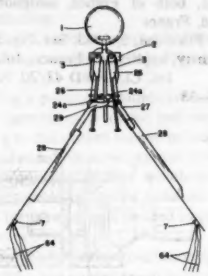
PCT Filed Nov. 11, 1981, Ser. No. 396,901

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1980, 3042534; Nov. 12, 1980, 8030125[U]

Int. Cl.⁴ A63H *3/20*

U.S. Cl. 446—54 **2 Claims**

1. A toy with parachute, comprising two grip arms (16) hinged at their upper end, between which arms a parachute is arranged, a spring means mounted to said toy at said upper end and acting on the grip arms in the area of the arm hinge to open the same, two large panels (20) on which the air pressure acts connected at the lower end to the grip arms, which panels are attached to said respective arms so that they, when the toy is moved through air, exert a power on the grip arms counteracting the spring means, and which panels (20) are hinged to the grip arms (16) and are each provided with an upwardly extending lever (21) and hooking means (17, 17*a*, 17*b*), the lever of each panel engaging the hooking means of the other only when the grip arms are closed and exerting a closing moment which is smaller than the moment of the spring acting in opening direction, the grip arms (16) defining an elongated cavity in



which the parachute is secured to eyes and in which the parachute is accommodated.

4,543,073

SELF-PROPELLED RECONFIGURABLE RUNNING TOY

Takashi Matsuda, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1984, Ser. No. 584,465

Claims priority, application Japan, Nov. 30, 1983, 58-184846[U]; Dec. 15, 1983, 58-193189[U]; Dec. 15, 1983, 58-193190[U]

Int. Cl.⁴ A63H *27/00, 11/10*

U.S. Cl. 446—230 **26 Claims**

1. A self-propelled reconfigurable running toy capable of both a translational and predetermined rotational movement while it is being played with, comprising

a frame member having a longitudinal axis;

a wheel assembly attached to the frame member;

a motor assembly attached to the frame member and which is capable of operatively driving the wheel assembly for translational movement across a support surface;

means for intentionally rotating the frame member about an axis transverse to the longitudinal axis so that the longitudinal axis is positioned at approximately a 90° angle to its original initial position at the start of its translational movement during a predetermined period of its translational movement, including a base member for mounting the running toy on said support surface; and

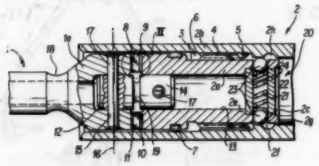
means for varying the force generated during rotation of the frame member including a member for varying the contact distance between one end of the frame member and the support surface when the base member is rotated, wherein said running toy can be stood up on said support surface by said base member when said frame member rotates about the axis traverse to the longitudinal axis during the predetermined period of its translational movement.

4,543,074

DEVICE FOR COUPLING TWO ROTARY MACHINES

Daniel Ville, Meudon la Forêt, and Michel R. C. Virmoux, Sartrouville, both of France, assignors to Hispano-Suiza, Saint Cloud, France

Filed Jul. 5, 1983, Ser. No. 510,828
Claims priority, application France, Jul. 8, 1982, 82 12321
Int. Cl.[4] F16D *43/20, 9/00*
U.S. Cl. 464—33 3 Claims



1. In a frangible device for coupling two rotary machines between which power is transmitted,

a first shaft connected to one said machine, having a bore in one end thereof, and a frangible groove,

a second shaft connected to the other said machine and having a bore in one end thereof,

means defining a dog clutch operative between the first and second shafts in a first rotational sense,

an intermediate shaft accommodated in the respective end bores of the first and second shafts, fast for rotation with said shafts, and having a frangible groove adapted to fracture at a lower torque value than that of the frangible groove of the first shaft and under conditions in which the sense of motion transmission is opposite to that intended to fracture the frangible groove of the first shaft, said intermediate shaft having two parts after fracture,

means operative in the event of fracture of the frangible groove of the intermediate shaft to space the first and second shafts apart and the fractured parts of the intermediate shaft whereby to avoid mutual contact of these parts, said means serving to prevent axial motion of the second shaft under these conditions, the improvement comprising

the provision on the dogs of the clutch of inclined opposed faces on the two halves thereof and spaced such that alternating deflections exerted on the first and second shafts causes uncoupling of the two halves of the clutch and thus of the shafts by the inclined faces riding up the one on the other,

means operative in the event of fracture of the frangible groove of the intermediate shaft to retain one part of the fractured intermediate shaft rigid with the second shaft,

said means operative in the event of fracture of the frangible groove of the intermediate shaft to space the first and second shafts apart, including

a first part of the second shaft,

a second part of the second shaft having a bore with a groove in the bore,

spline means coupling the first and second parts,

balls disposed adjacent the end of an first part of the second shaft opposite said dog clutch means and in transverse apertures thereof,

a compression spring,

a transverse bush housing the compression spring so that opposed ends thereof bias the balls radially outwardly,

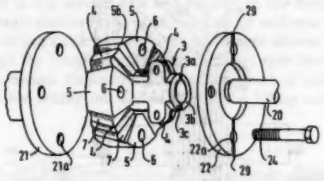
the arrangement being such that in the event of axial displacement of the first part of the second shaft relative to the second part thereof, the balls are displaced outwardly under the action of the spring and centrifugal force into the groove of the bore of the second shaft and are maintained therein so that contact between the dogs of the clutch and between the fractured ends of the intermediate shaft are prevented.

4,543,075

FLEXIBLE COUPLINGS

Terence H. Colford, Leicester, England, assignor to Dunlop Limited, London, England

Continuation of Ser. No. 362,992, Mar. 29, 1982, abandoned.
This application May 9, 1984, Ser. No. 608,530
Claims priority, application United Kingdom, Apr. 10, 1981, 81 11332
Int. Cl.[4] F16D *3/68*
U.S. Cl. 464—76 11 Claims



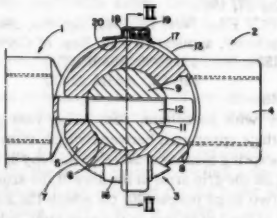
1. A flexible coupling for two components comprising at least two pairs of connector members for each component to be coupled and a plurality of elastomeric elements arranged alternately to form a ring in which alternate connector members are adapted for connection to a respective one of two components to be connected and each connector member has a pair of load transmitting surfaces which at least when the coupling is in an unstressed condition extend at an angle to the rotational axis of the coupling wherein there is an even number of connector members for attachment to each component and respective load transmitting surfaces of the successive connector members for attachment to a respective one component are angled alternately to face toward opposite ends of the coupling and are reversed in orientation of their angle to the rotational axis such that in use of the coupling to transmit torque, the induced axial component of force acting on half of the connector members for attachment to said one component substantially equals and opposes the induced axial conponent of force acting on the remainder of the connector members for attachment to said one component.

4,543,076

UNIVERSAL JOINT

Henry Andersson, Saltsjö Boo, Sweden, assignor to Affarsverket FFV, Eskilstuna, Sweden

Filed Nov. 3, 1983, Ser. No. 548,293
Claims priority, application Sweden, Nov. 5, 1982, 82 06290
Int. Cl.[4] F16D *3/22*
U.S. Cl. 464—152 11 Claims



1. Universal joint comprising two joint coupling members (1, 2; 21, 22) and intermediate coupling means for connecting the two coupling members to transmit rotary torque at a universal angle position between the two coupling members (1, 2; 21, 22), each of the two coupling members having a fork like claw (5; 23), the two claws which comprise the coupling mem-

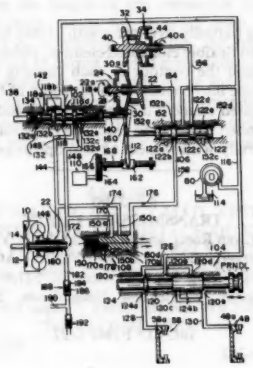
bers being axially rotatable in relation to each other to such angle as to engage each other over the intermediate coupling means (3; 25), characterized in that the intermediate coupling means comprises at least four separate coupling parts (9–12; 25), and biasing means (19, 32) for urging the coupling parts (9–12; 25) towards the two claws to automatically eliminate play within the joint resulting from wear.

4,543,077

METHOD AND APPARATUS FOR CONTROLLING CONTINUOUSLY VARIABLE V-BELT TRANSMISSION

Sigeaki Yamamuro, Zushi; Hiroyuki Hirano; Yoshiro Morimoto, both of Yokosuka, and Yoshikazu Tanaka, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 26, 1982, Ser. No. 362,489
Claims priority, application Japan, Mar. 28, 1981, 56-44749
Int. Cl.⁴ F16H *11/06*
U.S. Cl. 474—12 **7 Claims**



1. A continuously variable transmission for an automotive vehicle including an internal combustion engine, the continuously variable transmission comprising a V-belt, a drive pulley and a driven pulley wherein the V-belt operatively engages said drive and driven pulleys, each of said pulleys having a fluid chamber and two conical discs, a first conical disc of the drive pulley being secured to a drive shaft adapted to be driven by the engine, a first conical disc of the driven pulley being secured to a driven shaft, a second conical disc of the drive pulley being controllably movable in an axial direction of the drive shaft in response to a pressure of a fluid in the fluid chamber thereof, a second conical disc of the driven pulley being controllably movable in an axial direction of the driven shaft in response to a pressure of the fluid in the fluid chamber thereof, said continuously variable transmission comprising:

pumping means for supplying fluid having a first fluid pressure;

a first control valve for receiving the fluid supplied by said pumping means and for supplying the fluid with a discharge pressure;

a second control valve connected to the first control valve to receive the discharge pressure fluid therefrom for regulating fluid supply to and discharge from both of the fluid chambers said second control valve having a spool for determining a reduction ratio of the continuously variable transmission;

a lever having first and second ends, and a middle portion linked to one end of said spool and operable to displace said spool, said first end being displaceable according to an axial position of the second conical disc of said drive pulley;

said first control valve having means operatively connected with said first end of said lever for regulating the discharge pressure fluid supplied to said second control valve in response to the position of said first end of said lever;

an electric shift motor means for displacing said second end of said lever;

a control unit including:

means for detecting a revolution speed of the drive pulley and for generating a pulley revolution speed indicative signal;

means for detecting a parameter indicative of engine output torque and for generating a torque indicative signal;

means, responsive to the output torque indicative signal, for determining a desired value in engine revolution speed using a predetermined function which defines, for any value of output torque, a desired value in engine revolution speed and for generating a desired engine speed indicative signal;

means for comparing said pulley revolution speed indicative signal with said desired engine speed indicative signal, and for generating a comparison signal; and

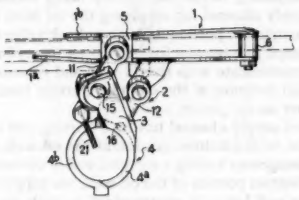
means, responsive to said comparison signal, for operating said shift motor to control the reduction ratio of the continuously variable transmission to decrease any difference between said pulley revolution speed indicative signal and said desired engine speed indicative signal.

4,543,078

PEDAL CRANK DERAILLEUR FOR A BICYCLE

Maurice E. L. Coué, Feucherolles, France, assignor to Huret et ses Fils, Nanterre, France

Filed Sep. 6, 1983, Ser. No. 529,882
Claims priority, application France, Sep. 15, 1982, 82 15595
Int. Cl.⁴ F16H *9/00*
U.S. Cl. 474—82 **3 Claims**



1. A pedal crank chain wheel derailleur for a bicycle having a chain, said derailleur comprising a fork element for guiding and shifting the chain relative to the pedal crank chain wheel, a support having a longitudinal axis and for fixing to a frame of the bicycle, a deformable parallelogram mechanism having four links relatively pivotable in fixed planes which are inclined upwardly and laterally from a verticle plane containing said longitudinal axis of said support and also containing a longitudinal axis of the bicycle when the support is mounted on said frame, said mechanism mounting the fork element on the support, means for shifting the fork element in translation relative to said support in such direction that the fork element effects a combined rising and advancing movement solely due to the action of said links when the derailleur is actuated for shifting the chain from a first chain wheel to a second chain wheel, which second chain wheel has a larger diameter than the first chain wheel.

4,543,079

DEVICE FOR AUTOMATICALLY ADJUSTING TENSION OF ENDLESS RUNNING MEMBER IN WRAPPING CONNECTOR DRIVING

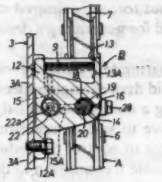
Yoshiaki Matsuda; Yoshimitsu Oohashi; Keiichi Sanpei, and Yoshifumi Nagamine, all of Sakai, Japan, assignors to Kubota Ltd., Osaka, Japan

Continuation of Ser. No. 552,012, Nov. 16, 1983, abandoned, which is a continuation of Ser. No. 200,340, Oct. 24, 1980, abandoned. This application Sep. 25, 1984, Ser. No. 654,523

Claims priority, application Japan, Dec. 19, 1979, 54-176955[U]

Int. Cl.⁴ F16H 7/08

U.S. Cl. 474—111 9 Claims



1. In a wrapping connector driving apparatus including an endless running member reeved around two rotatable shafts spaced apart by a specified distance, tensioning means disposed on the slack side of the running member for imparting tension to the running member by a tightener, and a transmission case housing the endless running member therein and containing at its lower portion oil so that the oil is entrained by the endless running member, a device for automatically adjusting the tension on the endless running member characterized by:

a main body of the adjusting device being attached to the transmission case and having at its upper portion an oil well for accommodating the oil entrained by the endless running member,

the adjusting device main body being internally formed with a cylinder portion and having a piston slidably inserted in the cylinder portion and a resilient member causing the piston to press the tightener against the endless running member,

the adjusting device main body being formed with an oil supply channel for supplying the oil from the oil well to the cylinder portion through a check valve and with an oil escape passageway for permitting the cylinder portion to communicate with the oil well and releasing the internal high pressure of the cylinder portion resulting from impact on the piston,

the oil supply channel having a starting end in communication with a bottom portion of the oil well, the oil escape passageway having a terminal end in communication with a bottom portion of the oil well, the supply channel starting end being in communication with the oil well at a higher level than the escape passageway terminal end,

the adjusting device main body being attached to the transmission case by bolts positioned at least above and below the cylinder portion toward the endless running member, the oil well being positioned at a larger distance away from the endless running member than the upper and lower attaching bolts.

4,543,080

DRIVING BELT

Giorgio Tangorra, Monza, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

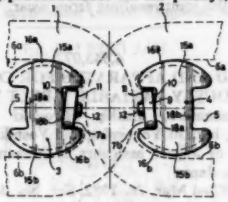
Filed Apr. 10, 1984, Ser. No. 598,852

Claims priority, application Italy, Apr. 18, 1983, 20657 A/83

Int. Cl.⁴ F16G 1/28

U.S. Cl. 474—204 11 Claims

1. A belt for transmitting motion between two pulleys comprising an annular body of elastomeric material, said belt being characterized in comprising a flat-shaped annular body reinforced with flexible and continuous elongated elements resistant to traction, directed in the longitudinal direction of the belt, at least a plurality of openings provided in said annular body aligned in the longitudinal direction of the belt to engage with corresponding protuberances on the pulleys, said openings extending partially over the width of said belt, at least one continuous and flexible elongated element, resistant to traction, arranged around the contour of each opening in the portion adapted to come into contact with the tooth of the pulley, said flexible elongated element disposed around said contour having ends extended so far as to reach said longitudinal elements arranged laterally with respect to said openings.



4,543,081

TRANSMISSION CHAIN

Jacobus H. M. van Rooij, and Leonardus M. A. Vaessen, both of Nuenen, Netherlands, assignors to Varitrac AG, Switzerland

Filed Aug. 30, 1983, Ser. No. 527,660

Claims priority, application Netherlands, Sep. 1, 1982, 8203421

Int. Cl.⁴ F16G 1/21

U.S. Cl. 474—242 5 Claims

1. A transmission chain for a cone pulley having oppositely facing cone surfaces, the chain comprising:

a plurality of intercoupled links, each link having a longitudinally extending body which is aligned with a longitudinal direction of the transmission chain, the link body including first and second longitudinally opposite end portions, a hinge pin aperture defined in and extending transversely to the link and first and second link upright aperture surfaces located in the hinge aperture, the first upright aperture surface located toward the first end portion and facing toward the second upright aperture surface which is located toward the second end portion of the link;

a plurality of hinge pins, each hinge pin passing through a plurality of the hinge pin apertures to effect an intercoupling of the links through which the respective pin passes, each hinge pin comprising an elongate body having a pair of opposite, curved rolling contact surfaces which face toward respective groups of upright aperture surfaces located in the links through which the hinge pin passes,

each hinge pin further having a pair of opposite end surfaces shaped for frictional sliding engagement with the cone surfaces of the cone pulley;

a plurality of elongate intermediate members, each being located between a respective hinge pin and a respective group of link upright aperture surfaces, each intermediate member having a rolling contact surface which extends along a length of the intermediate member and having an opposite link contact surface, the link contact surface of the intermediate member being in contact with the respective group of link upright aperture surfaces to which the link contact surface is adjacent, and the rolling contact surface of the intermediate member facing toward one of the rolling contact surfaces of its respective hinge pin, the rolling contact surfaces of the hinge pin and the intermediate member having different radii of curvature to permit rolling engagement therebetween;

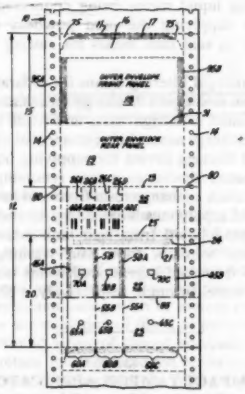
each of the hinge pins having a predetermined length, each of the intermediate members having a length which is not larger than the length of the respective hinge pin, the chain including means for securing each intermediate member to its respective hinge pin, the securing means being adapted to permit limited displacement of the intermediate member in a direction along the length thereof, the displaceability of the intermediate member permitting the intermediate member to project past one or the other of the end surfaces of its respective hinge pin.

4,543,082

METHOD OF MAKING DIRECT MAIL ARTICLE WITH REPLY ENVELOPE AND DETACHABLE REPLY DEVICES VISIBLE WITHIN REPLY ENVELOPE

John W. Stenner, Orange, Conn., assignor to Kurt H. Volk, Inc., Milford, Conn.

Filed Sep. 17, 1982, Ser. No. 419,224
Int. Cl.[4] B65D *27/06*
U.S. Cl. 493—216 **8 Claims**



1. A method for producing an article, suitable for mailing, that comprises an outer envelope containing at least one detachable reply device and a pre-formed reply envelope provided with at least one reply coupon pocket adapted to receive the reply device and an aperture that allows viewing the contents of the reply coupon pocket, after sealing the reply envelope, to determine the presence or absence of a reply device, the article produced from a composite sheet comprising:

(i) an outer envelope sheet defining a flap, a front panel and a rear panel, and integral therewith

(ii) a detachable reply device joined along a transverse line to said outer envelope rear panel, and integral with the reply device

(iii) a reply envelope sheet defining a flap, a front panel and a rear panel, the panels divided along a longitudinal line to define a field for a reply coupon pocket, said reply envelope sheet joined along a transverse line of perforations to said reply device;

the method comprising the steps of:

(a) forming an aperture within the reply coupon pocket field to allow viewing at least a portion of the contents of the reply coupon pocket within the reply envelope after sealing;

(b) folding the reply envelope sheet to superpose the reply envelope rear panel with the reply envelope front panel;

(c) bonding the front and rear envelope panels along their longitudinal edges and along the longitudinal line to thereby form a reply coupon pocket;

(d) further folding the composite sheet to position the reply envelope and detachable reply device between the front and rear panels of the outer envelope sheet;

(e) bonding the longitudinal edges of the outer envelope front and rear panels to form an outer envelope pocket containing the reply envelope and the reply devices; and

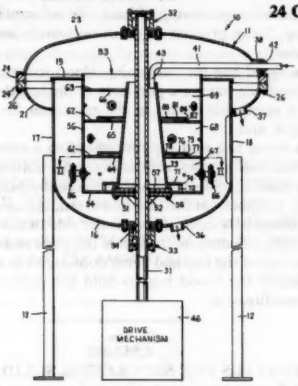
(f) while the outer envelope flap is open, separating the reply device from the outer envelope rear panel.

4,543,083

CENTRIFUGE AND VALVE THEREFOR

Jerry O. Bounds, Dowagiac, Mich., assignor to Crude Oil Quality Control Corporation of Michigan, Dowagiac, Mich.

Filed Jun. 6, 1984, Ser. No. 617,775
Int. Cl.[4] B04B *1/16*
U.S. Cl. 494—4 **24 Claims**



1. A centrifuge for separating first and second liquids from a mixture thereof, the specific gravity of the first liquid being greater than that of the second liquid, comprising: a container supported for rotation about an axis; drive means for effecting rotation of said container about said axis; supply means for introducing into said container during rotation thereof the mixture of the first and second liquids, rotation of said container causing the first liquid to move to a radially outermost portion of said container; valve means supported on said container and in fluid communication with said portion of said container and with a region external to said container, said valve means being responsive to fluid pressure in said portion of said container for discharging quantities of the first liquid from said portion of said container to said region external to said container during rotation of said container; and means for removing from said container during rotation thereof quantities of the second liquid which have been separated from the first liquid; wherein said container includes a cylindrical wall

substantially concentric with said axis, said portion of said container being adjacent said wall and said wall having plural angularly spaced openings therethrough; and wherein said valve means includes plural valves which are each supported on said cylindrical wall in the region of a respective said opening therein and which each control fluid flow through the associated opening.

4,543,084

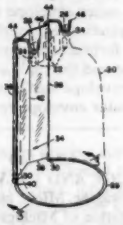
BLOOD BAG SUPPORT FOR CENTRIFUGATION

Mary L. Bailey, 5543 SE. Oetkin Dr., Milwaukie, Oreg. 97222

Continuation-in-part of Ser. No. 320,221, Feb. 9, 1982, abandoned. This application Oct. 27, 1983, Ser. No. 545,940

Int. Cl.[4] B04B *5/02, 7/00*

U.S. Cl. 494—20 **12 Claims**



1. A blood centrifugation apparatus comprising in combination:

(a) a centrifuge having at least one substantially cylindrical cup, being pivoted to pivot outwardly as the centrifuge spins;

(b) a blood bag for containing blood to be centrifuged, the blood bag having a port area at the top thereof, and having engagable means in the port area for holding it upright; and

(c) a blood bag port support including a substantially cylindrical base positionable adjacent the bottom of the cup, an upstanding plate attached substantially perpendicularly to the periphery of the base and extending up adjacent to and substantially conforming to the side of the cup, and hook means mounted on the top of the plate and extending over the top of the cup and being configured to engage the port area of the blood bag to hold the ports upright during centrifugation.

4,543,085

APPARATUS FOR SEPARATING SOLID MATTERS

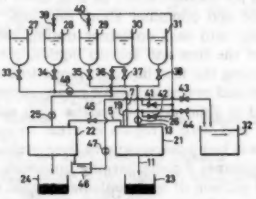
Kiyomi Funabashi, Katsuta; Fumio Kawamura; Toshio Takagi, both of Hitachi; Megumu Urata, Naka, and Tetsuo Fukasawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1983, Ser. No. 461,916

Claims priority, application Japan, Feb. 5, 1982, 57-17959

Int. Cl.[4] B04B *11/08*

U.S. Cl. 494—30 **12 Claims**



1. An apparatus for separating used powdery ion exchange resins comprising:

an outer vessel including a non-perforated cylindrical member having upper and lower end plates, with each plate having an opening at its central portion;

an inner vessel including a perforated cylindrical member having upper and lower end plates, said inner vessel being concentrically disposed within and radially spaced from said outer vessel to form therebetween an annular space, and said upper and lower end plates each having an opening at its central portion;

a drive shaft coaxially and drivingly connected to each of said inner and outer vessels;

means for rotating said drive shaft, and said inner and outer vessels about their common generally vertical axis;

filtrate discharge means extending through at least one of said openings, and having an inlet and extending near to the inside of the cylindrical member of the outer vessel for receiving filtrate from said annular space;

supplying liquid means for supplying liquid that is to be treated, during rotation of said vessels extending into the inner vessel through said openings, and having a discharge end in said inner vessel below the top of said inner vessel;

liquid and floating solid matter discharge means extending through said openings, and having an inlet end extending near to the inside and top of the cylindrical member of the inner vessel;

precipitated solid matter discharge means provided in the lower portion of the inner vessel for discharging solid matter from said inner vessel through the openings of said inner and outer vessel lower plates

a plurality of valves;

tank means for supplying used powdery ion exchange resins;

said filtrate discharge means having a discharge end;

tank means for receiving through one of said valves waste liquid from the discharge end of said filtrate discharge means;

separate tank means for storing a separated liquid and for receiving through a second one of said valves liquid from said discharge end of said filtrate discharge means;

a separate tank for storing a pre-treatment liquid and receiving through a third one of said valves liquid from said discharge end of said filtrate discharge means;

said supplying liquid means being connected to said tank means for supplying the used powdery ion exchange means and to said tank means for storing the separated liquid;

separate centrifugal filtering means for separating the liquid supply from said liquid discharge means into regenerated powdery anion exchange resins and waste liquid;

said liquid discharge means being connected to said separate centrifugal filtering device for supplying liquid thereto;

said solid matter discharge means removing regenerated powdery cation exchange resin from said inner vessel; and

washing liquid supply means extending into said inner vessel and supplying liquid from said tank means for storing pretreatment solution, from said washing water tank means and from said regenerated water tank means into said inner vessel through, respectively, a plurality of said valves.

4,543,086

COMPACT TAMPON APPLICATOR

Carl W. Johnson, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 1, 1984, Ser. No. 616,043

Int. Cl.[4] A61F *15/00*

U.S. Cl. 604—11 **2 Claims**

1. A tampon applicator comprising in combination

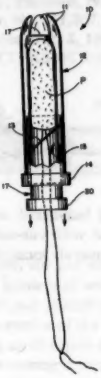
(a) an outer tube with an insertion end;

(b) a bridge member diagonally spanning the inner diameter of the outer tube;

(c) an inner tube with a first slot and a second slot disposed opposite said first slot;

(d) said first slot extending from a first stop near said tube base to a second stop near the opposite end of said base;

(e) said second slot extending from said opposite end to another stop near said base but farther from said base than said first stop said second stop and said another stop simultaneously in contact with said bridge when the tube is



expelled the side of said bridge member nearest the end engaging said second slot; and

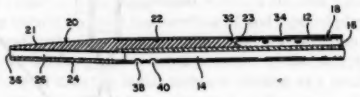
(f) an outer shoulder extending around said inner tube base to prevent the inner tube base from entering the outer tube.

4,543,087

DOUBLE LUMEN CATHETER TIP

Richard K. Sommercorn, and Wayne E. Quinton, both of King County, Wash., assignors to Quinton Instrument Company, Seattle, Wash.

Filed Nov. 14, 1983, Ser. No. 551,102
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—43 **4 Claims**



1. A double lumen catheter comprising:

a flexible, open-ended, multichannel tube having a fluid intake lumen and fluid return lumen of equal cross-sectional area separated by means of an internal divider, said tube having a plurality of apertures positioned rearward of the distal end and opening into said intake lumen, said apertures communicating with or among one another to prevent the accumulation of fibrin or other matter within the channel, and a pair of spaced apertures opening into said fluid return lumen positioned rearward of the distal end and communicating with the fluid return lumen, said apertures communicating with or among one another to prevent the accumulation of fibrin or other matter within the channel as fluid exits from the channel through said apertures; and

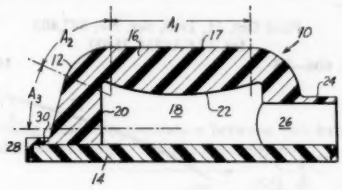
a preformed tip having a beveled distal end and stepped proximal end, said proximal end having a first portion adaptable for insertion into and in sealing relationship with the fluid intake lumen and terminating just forward of the apertures opening into the fluid intake lumen, said first portion having a beveled end to prevent the occlusion of fluid entering the fluid intake lumen, and a second portion adaptable for insertion into and in sealing relationship with the fluid return lumen and terminating just forward of the apertures opening into the fluid return lumen, said second portion having an open-ended channel communicating with the fluid return lumen to allow for the flow of fluid outwardly from said fluid return lumen.

4,543,088

SELF-SEALING SUBCUTANEOUS INJECTION SITE

Matthew W. Bootman, Bakersfield, and Ronald K. Yamamoto, Goleta, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Nov. 7, 1983, Ser. No. 549,092
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—93 **11 Claims**



1. A self-sealing subcutaneous injection site comprising:

a housing having a bottom wall and a resilient, generally dome-shaped wall defining an interior chamber, which interior chamber has a convex upper wall formed by a portion of the dome-shaped wall for providing compressive forces within such upper wall for sealing punctures through the upper wall upon fluid pressurization of such interior chamber; and

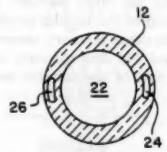
a conduit extending through the dome-shaped wall into the interior chamber for providing a fluid-flow passageway to the interior chamber.

4,543,089

GASTROINTESTINAL FEEDING AND ASPIRATING DEVICE FOR USE IN TREATING PATIENTS

Gerald Moss, R.D. #1, West Sand Lake, N.Y. 12196

Continuation-in-part of Ser. No. 312,125, Oct. 16, 1981, abandoned. This application Mar. 8, 1984, Ser. No. 585,632
Int. Cl.⁴ A61M *11/00*
U.S. Cl. 604—93 **13 Claims**



1. A gastrointestinal feeding and aspirating device for surgical insertion into a patient's body through the abdominal and gastric wall, comprising:

an aspirating lumen having an external end portion to be disposed outside the body, said external portion having an opening for connection to a source of suction and having an internal end portion to be disposed in the proximal segment of the small bowel, said portion having at least one orifice for intake of matter to be discharged from the body;

a feeding lumen having an external end portion to be disposed outside the body, said portion having an opening adapted to receive food to be transported through the lumen and having an internal end portion to be disposed in the proximal segment of the small bowel, said internal

portion having an orifice therein for the discharge of food; and

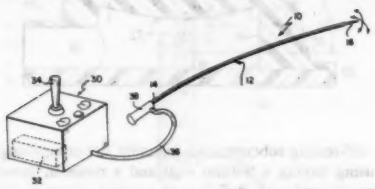
means for securing the device to the patient's body through the abdominal and gastric wall such that the internal portion of each lumen is located in the proximal segment of the small bowel, said feeding orifice being maintained at a location which is substantially three inches downstream of the most distal aspirating orifice, the portion of each lumen between the securing means and that lumen's external opening being continuous.

4,543,090

STEERABLE AND AIMABLE CATHETER

William C. McCoy, 11339 Valley Meadow Dr., Zionsville, Ind. 46077

Filed Oct. 31, 1983, Ser. No. 547,402
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—95 **14 Claims**



1. A catheter comprising an elongated tubular member having a proximal end and a distal end for insertion into a body, at least two temperature-activated memory elements in the distal end of the tubular member, each memory element moving to assume a predetermined shape when heated to a predetermined temperature, the memory elements being disposed in the distal end of the tubular member so that they move in different directions to assume their predetermined shapes, means for coupling one memory element to another memory element so that when the one memory element moves in a first direction to assume its predetermined shape a force is applied to move the other memory element in the first direction and when the other memory element moves in a second direction to assume its predetermined shape a force is applied to move the one memory element in the second direction, and control means for heating selectively each memory element to the predetermined temperature so that the one memory element assumes its predetermined shape and the other memory element is moved to deflect the distal end of the tubular member in the first direction and so that the other memory element assumes its predetermined shape and the one memory element is moved to deflect the distal end of the tubular member in the second direction.

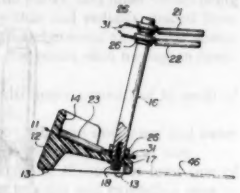
4,543,091

X-RAY MARKER DEVICE

Edward C. Froning, P.O. Box 1768, Rancho Santa Fe, Calif. 92067, and Gregory S. Graham, Ventura, Calif., assignors to Edward C. Froning, Rancho Sante Fe, Calif.

Filed May 18, 1983, Ser. No. 495,665
Int. Cl.[4] A61B *6/12*
U.S. Cl. 604—116 **4 Claims**

1. An X-ray marker device comprising a base formed with a rectangular storage depression, a single, round rod extending upward from said base adjacent one longitudinal edge of said depression, a substantially rectangular marker shaped to fit into said depression, said marker having a cylindrical collar fixed thereto, said collar being rotatable relative to said rod and longitudinally slidable along said rod between a storage position with said marker stored in said depression and an operative position, said marker when in operative position being on the side of said rod opposite said depression, and turned 180° relative to its storage position and substantially elevated above said base, said collar having friction means on its interior, the weight of said marker causing said friction means to secure said collar and said marker against movement longitudinally of said



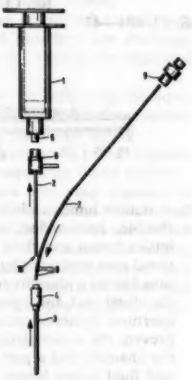
rod; said marker being laminated, one lamina being of radiopaque material formed with cut-outs pointed at at least one end and radiopaque numerals located in said cut-outs.

4,543,092

CATHETER SET

Doron Mehler, Warburghof 18, 3000 Hannover 61, and Brigitte Otten, Im Schiffsmoor 41, 2850 Bremerhaven-Surheide, both of Fed. Rep. of Germany

Filed Aug. 8, 1983, Ser. No. 521,328
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1982, 8222222[U]
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—164 **6 Claims**



1. A catheter set comprising a syringe having an outlet, a hollow mandrin attachable to the syringe, means for removably connecting said mandrin to the outlet of said syringe, a plastic canula fitting closely over said mandrin, an elongate catheter insertable through said canula when said mandrin is removed from said canula, said catheter having an outside diameter somewhat less than the inside diameter of said canula and means for removably connecting an end of said catheter to the outlet of a syringe, said mandrin having a length of at least 50 mm and the tip of said mandrin being ground to form an end face disposed at an angle of approximately 35° to 45° to the axis of said mandrin.

4,543,093

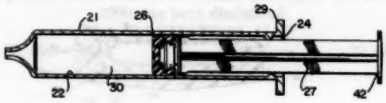
VARIABLE SEALING PRESSURE PLUNGER ROD ASSEMBLY

Werner Christinger, Franklin Lakes, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Continuation-in-part of Ser. No. 451,307, Dec. 20, 1982, Pat. No. 4,500,310. This application Dec. 3, 1984, Ser. No. 677,124

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—228 **22 Claims**



1. A plunger rod assembly for use with a receptacle having a substantially cylindrical inside wall and provided with means for receiving the plunger rod assembly and means for fluid communication with the exterior of the receptacle comprising:

a plunger rod including an elongate shaft portion defining a longitudinal axis and having a tapered tip portion at the distal end thereof, said tapered tip portion including a front portion at the distal end thereof and a circular tapered plunger rod wall connected to said front portion and having a convexly shaped surface;

a flexible cup-shaped thermoplastic stopper including an annular side wall, a continuous front wall connected to said side wall, an exterior surface of said annular side wall being larger in diameter than the receptacle inside wall, an inside surface of said front wall, a tapered annular inside wall connected to said annular side wall, said tapered annular inside wall and said inside surface being connected and defining a cavity which has said tapered tip portion received therein, said tapered annular inside wall having a substantially continuous smooth surface, said tapered annular inside wall being inclined in the same direction as said tapered plunger rod wall and adjacent thereto whereby force applied to said shaft portion in the direction of descending taper of said tapered plunger rod wall creates a force component which is directed substantially outwardly from the interface of said tapered plunger rod wall and said tapered annular inside wall wherein said exterior surface applies more pressure to the receptacle inside wall than the initial pressure existing as a result of said exterior surface being larger than the receptacle inside wall; and

cooperating means for maintaining the positional relationship of said stopper and said plunger rod.

4,543,094

SYRINGE AND ACCESSORY

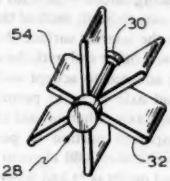
John K. Barnwell, 6365 Susan Dr., Mableton, Ga. 30059

Filed Mar. 19, 1984, Ser. No. 591,003

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—236 **10 Claims**

1. A syringe comprising a tubular housing having a barrel open at one end in which a plunger is slidably positioned and a storage chamber separated from said barrel by a partition; a conduit extending through said partition and said storage chamber to a needle mount orifice and having an outlet opening into said chamber; and three-way valve means associated with said conduit for alternatively providing fluid communication through said conduit between said needle mount orifice and said storage chamber for loading said storage chamber with a medication, for fluid communication between said storage chamber and said barrel for drawing medication from said chamber into said barrel upon actuation of said plunger, and



for providing fluid communication between said barrel and said needle mount orifice for medication ejection.

4,543,095

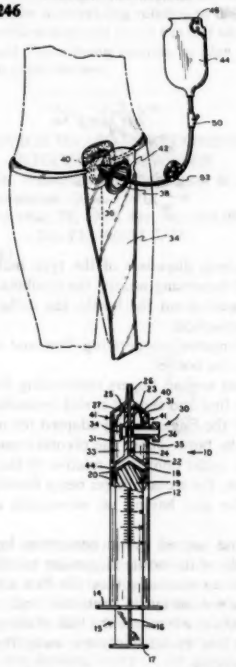
VISUAL FLOW INDICATOR

Ole R. Jensen, River Vale, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 14, 1983, Ser. No. 542,139

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—246 **7 Claims**



1. Pulsating apparatus for visually indicating the direction and flow of a fluid comprising a hollow chamber having an axis and comprising first and second spaced, substantially circular walls and a substantially cylindrical wall, colinearly aligned inlet and outlet ports, located at tangentially spaced points along said cylindrical wall of said chamber on opposite sides thereof, an element freely rotatably mounted within said chamber, said element comprising an axle and a plurality of

blade-like projections radially extending from said axle towards said cylindrical wall, at least one of said projections being shorter than the others and having a peripheral edge spaced from said cylindrical wall, said axle comprising end portions extending laterally beyond the plane of said projections at either side thereof, each of the circular walls comprising a recess in the interior surface thereof, said recesses being aligned with each other and with the axis of said chamber, said recesses being adapted to accept said laterally extending end portions of said axle so as to permit said element to freely rotate about said axis, wherein said chamber comprises a substantially transparent portion to permit observation of the rotational movement of said element as fluid flows from said inlet port to said outlet port and wherein said rotational movement of said element has a pulsating effect due to the presence of said one shorter projection.

4,543,096

EYEDROP DISPENSER WITH EYELID OPENING MEANS

Thomas Keene, 615 N. 57th St., Philadelphia, Pa. 19131

Filed Aug. 5, 1983, Ser. No. 520,651
Int. Cl.[4] A61M *7/00*
U.S. Cl. 604—300 **3 Claims**

1. In an eyedrop dispenser of the type including a bottle having a liquid dispensing nozzle, the combination of

a collar secured about the bottle, the collar comprising a pivotal connection;

a pair of elongated cooperating first and second fingers secured to the bottle,

the first and second fingers terminating forwardly in respective first and second eyelid contactors,

the first of the fingers being adapted for movement relative to the bottle about the pivotal connector to move the first eyelid contactor relative to the second eyelid contactor, the second finger being fixedly connected to the collar and having no movement relative to the bottle,

the first and second eyelid contactors being positioned forwardly of the bottle dispensing nozzle;

spring means to normally bias the first eyelid contactor toward the second eyelid contactor; and

operator means to overcome the bias of the spring means to move the first eyelid contactor away from the second eyelid contactor,

the operator means comprising a pivot connected to the pivotal connection of the collar and an operator integral with and extending from the first finger;

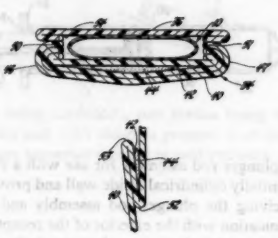
whereby the eyelids of the user may be separated and eyedrops can be dispensed from the nozzle in a simultaneous manner when the operator is moved about the pivot and a portion of the operator is pressed into contact with the bottle.

4,543,097

OSTOMY BAG APPARATUS WITH SIDE WALL POCKET TO CONTAIN A DEODORANT MEMBER

Alta R. Van Polen, Rte. 2, Box 315H, Roscommon, Mich. 48653, assignor to Alta R. Van Polen and James F. Sartwell, both of Roscommon, Mich.

Filed Nov. 1, 1982, Ser. No. 438,370
Int. Cl.[4] A61F *5/44*
U.S. Cl. 604—333 **6 Claims**



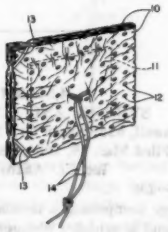
1. An ostomy bag cover comprising, in combination an ostomy bag enclosure which includes a first section and a second section which are attached together so as to form an ostomy bag enclosure which is adapted to substantially enclose an ostomy bag between said sections and be supported by an ostomy bag, fold means in at least one of said sections so as to form a pocket of a continuous fold of one of said sections which forms the ostomy bag cover and means for retaining said fold means in said one section whereby a deodorizing member may be inserted in said pocket so as to be supported by said pocket.

4,543,098

TAMPON WITH RESILIENT COMPONENT AND MICROFIBER INSERT

Dexter L. Wolfe, and Robert J. Peerenboom, both of Outgamie County, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 452,644, Dec. 23, 1982, abandoned.
This application Nov. 29, 1984, Ser. No. 663,637
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—370 **6 Claims**



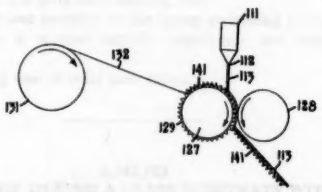
1. A tampon comprising in combination; a withdrawal string, a pledget having an inner absorbent layer, and an absorbent outer portion made of a resilient transfer layer containing thermoplastic fibers said transfer layer being integrated to a nonwoven thermoplastic cover overlying the said transfer layer spaced bonding said bonding surrounded by transfer zones for preferentiably conducting fluid.

4,543,099

METHOD FOR IMPARTING ELASTIC PROPERTIES TO A FLEXIBLE SUBSTRATE

William L. Bunnelle, Stillwater, and Richard C. Lindmark, Jr., Coon Rapids, both of Minn., assignors to H. B. Fuller Company, Saint Paul, Minn.

Division of Ser. No. 247,998, Mar. 26, 1981,. This application Jul. 19, 1982, Ser. No. 399,780
The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.
Int. Cl.[4] B32B *27/08, 31/08*
U.S. Cl. 604—385 A 23 Claims



1. A method for imparting elastic properties to a flexible substrate, which comprises contacting a surface of the flexible substrate with a band of a self-adhering elastic composition which consists essentially of:

a major amount by weight, not exceeding 70% by weight, of a rubbery block copolymer, which copolymer includes a rubbery midblock portion and which is terminated with vinyl arene endblocks, about 70 to 80% by weight of said rubbery block copolymer comprising said rubbery midblock portion and about 20 to about 30% by weight of said rubbery block copolymer comprising said vinyl arene endblock;

a minor amount by weight, not less than 30% by weight, of a tackifying resin generally compatible with and generally associated with said midblock portion;

2–9% by weight of an aromatic, essentially hydrocarbon resin having a glass transition temperature and a softening point above those of said vinyl arene endblocks and said tackifying resin; said aromatic, essentially hydrocarbon resin being generally compatible with and generally associated with said endblock; and

0–5% by weight of essentially inert extenders, fillers, pigments, and antioxidants that do not substantially affect the adhesive of elastic properties of the composition;

the foregoing proportions being selected to provide the following pressure-sensitive adhesive and rheological properties:

(i) a tensile strength at 500% elongation, determined at 20°–25° C., of at least 50 pounds per square inch;

(ii) a 180° peel resistance, according to PSTC-1, determined at 20°–25° C. for 24 hours after formation of the pressure-sensitive adhesive bond, of at least about 450 grams per 25.4 millimeter-width;

(iii) a dead load deformation, tested at room temperature, 37.8° C., 43.3° C., and 48.9° C. for 3 hours under 1500 g/cm^2, of less than 50%, where dead load deformation is equal to the increased length minus the original length divided by the original length of a sample at least 25 millimeters in length, and a loss modulus, a storage, modulus, and a loss tangent measured at 0.01–0.25 Hz throughout the temperature range of 25°–50° C. as follows:

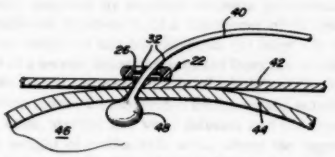
loss modulus: 4×10^4 to 35×10^4 dynes/cm^2
storage modulus: 75×10^4 to 200×10^4 dynes/cm^2
loss tangent: 0.03 to 0.3.

4,543,100

CATHETER AND DRAIN TUBE RETAINER

Stuart A. Brodsky, 690 Blackhawk Rd., NE., Albuquerque, N. Mex. 87122

Filed Nov. 1, 1983, Ser. No. 547,634
Int. Cl.[4] A61M *25/02*
U.S. Cl. 604—180 5 Claims



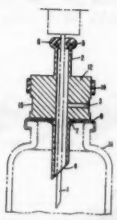
1. A catheter and drain tube retainer, said retainer including a body having a peripheral frame of a first thickness and a membrane extending across the interior of the frame, said membrane being of a second thickness considerably less than the first thickness, said membrane including a central opening therein and generally radial slots formed therein extending outwardly from said opening toward said peripheral frame and defining generally triangular tongue protions of said membrane between adjacent slots and with the tapered apex portions of said tongue portions spaced about said opening, one side of said peripheral frame including attaching means for removably anchoring said frame in overlying relation to the outer surface of a body skin portion disposed about the exit site of a catheter or drain tube, said frame being circular in plan and generally circular in radial cross section.

4,543,101

VALVE DEVICE TO AID IN RECONSTITUTING INJECTABLE POWDERS

Robert C. Crouch, Wilmington, Del., assignor to Adria Laboratories, Inc., Columbus, Ohio

Filed Mar. 28, 1984, Ser. No. 594,057
Int. Cl.[4] A61M *5/16*
U.S. Cl. 604—411 1 Claim



1. A one-piece sterilizable device for use in equalizing the pressure inside a vial during the addition or removal of fluid which compares a cannula having a sharpened beveled lower end for puncturing the septum of a vial, a blunt upper end covered with a septum that can be punctured by the needle of a hypodermic syringe, and an enlarged annular portion below the blunt upper end limiting entry of the device into the vial, said enlarged annular portion having an air channel leading from the inside of the cannula through the enlarged annular portion to the outside of the cannula said air channel being provided at its outer end with means for one-way airflow, said means for one-way airflow being a rubber band stretched around the circumference of the enlarged annular portion.

4,543,102

AQUEOUS PRINTING INKS FOR TRANSFER PRINTING CONTAINING POLYVINYL ALCOHOL AND ACRYLATE POLYMER

Raymond Défago, and Rolf Bäuerle, both of Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jun. 3, 1983, Ser. No. 500,911

Claims priority, application Switzerland, Jun. 4, 1982, 3471/82

Int. Cl.[4] B41M *5/02*; C09D *11/10*; D06P *5/00*

U.S. Cl. 8—471 7 Claims

1. An aqueous printing ink having a viscosity of 10 to 300 mPas which, in addition to the aqueous base, comprises

(a) at least one sublimable disperse dye suitable for transfer printing on polyester materials,

(b) at least one polyvinyl alcohol, and

(c) at least one member of the group consisting of a polyacrylate, a styrene acrylic copolymer and mixtures thereof,

said ink being free of solid inert fillers.

4,543,103

METHOD OF DYEING A GLASS SUBSTRATE WITH A POLYCATIONIC DYESTUFF

Jürg Troesch, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Apr. 16, 1984, Ser. No. 600,488

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 3313692

Int. Cl.[4] D06P *3/80*; B41M *1/34*; C03C *17/28*; C09D *11/82*

U.S. Cl. 8—523 24 Claims

1. A process for dyeing or printing a glass substrate which comprises treating the substrate with a dyeing liquor or printing paste containing a water-soluble polycationic dyestuff having, per dyestuff molecule, at least 1.3 cationic groups selected from quaternary nitrogen atoms and protonated nitrogen atoms, said number of cationic groups being at least one greater than the number of anionic groups per molecule.

4,543,104

COAL TREATMENT METHOD AND PRODUCT PRODUCED THEREFROM

George E. Brown, Jr., and Bruce N. Hoppert, both of Cincinnati, Ohio, assignors to Brown Coal Corporation, Cincinnati, Ohio

Continuation of Ser. No. 618,779, Jun. 12, 1984, abandoned, which is a continuation of Ser. No. 442,503, Nov. 17, 1982, abandoned. This application Oct. 30, 1984, Ser. No. 666,135

Int. Cl.[4] C10L *9/06*

U.S. Cl. 44—1 SR 13 Claims

1. In a process for treating crushed coal to remove sulfur and ash therefrom, wherein an agitated coal-water mixture is prepared on the basis of a solids content of about 10 to 40% by weight and ash and sulfur are subsequently removed by mechanical separation the improvement that comprises introducing into said mixture about 1/10 to 5 pounds of ozone per ton of coal and continuing to agitate said mixture for about 5 to 30 minutes.

2. The process of claim 1 wherein about ½ to 1 pound of ozone is used.

3. The process of claim 2 wherein after treatment with said ozone the coal-water mixture is rendered alkaline and subjected to an electric potential of about 6 to 24 volts at 6 to 100 amps.

10. A process for improving the hydrophobic properties of a coal-water mixture consisting essentially of treating the coal-water mixture with ozone in an amount of about 1/10 to 5 pounds of ozone.

4,543,105

MODIFICATION OF LIQUID HYDROCARBONS

John S. Roberts, Berkshire, and Frederick A. Waite, Buckinghamshire, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Sep. 20, 1983, Ser. No. 534,120

Claims priority, application United Kingdom, Sep. 16, 1983, 8324903

Int. Cl.[4] C10L *1/18, 1/22*

U.S. Cl. 44—55 28 Claims

1. A method for the isolation in solid form, from a latex in which it has been prepared by aqueous emulsion polymerisation of the constituent monomers, of a copolymer of (i) from 75% to 98% by weight of tert-butylstyrene, (ii) from 1% to 24% by weight of a second monomer selected from the acrylic and methacrylic esters of monohydric alcohols containing from 1 to 4 carbon atoms, 2-ethoxyethyl methacrylate, acrylonitrile, vinyl acetate, styrene and vinyl toluene, and (iii) from 1% to 10% by weight of methacrylic acid, where the aggregate weight of monomers (i), (ii) and (iii) is 100%, the method consisting in the flocculation of the particles of copolymer in the latex by the addition to the latex of a flocculating agent capable of destabilising the particles therein selected from the group consisting of an aqueous solution of a quaternary ammonium salt containing in the molecule at least one organic residue attached to the nitrogen atom which contains at least 6 carbon atoms and a water-miscible organic liquid which is a non-solvent for the copolymer, and separating the flocculated copolymer from the other constituents of the latex.

4,543,106

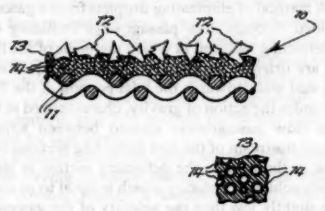
COATED ABRASIVE PRODUCT CONTAINING HOLLOW MICROSPHERES BENEATH THE ABRASIVE GRAIN

Dhan N. Parekh, Williamsville, N.Y., assignor to Carborundum Abrasives Company, Niagara Falls, N.Y.

Filed Jun. 25, 1984, Ser. No. 623,979

Int. Cl.[4] B24D *3/32, 3/34, 11/02*

U.S. Cl. 51—295 16 Claims



1. In a coated abrasive product which comprises a fabric backing, a layer of abrasive grain and at least one layer of resin between said backing and abrasive grain; the improvement which comprises the presence of hollow microspheres at least partly embedded in said resin layer.

9. In a process for manufacturing a coated abrasive product which comprises coating a fabric backing with a resin followed by application of abrasive grain to the resin, the improvement which comprises incorporating hollow microspheres into said resin coating.

4,543,107

VITRIFIED BONDED GRINDING WHEELS CONTAINING SINTERED GEL ALUMINOUS ABRASIVE GRITS

Charles V. Rue, Petersham, Mass., assignor to Norton Company, Worcester, Mass.

Filed Aug. 8, 1984, Ser. No. 638,917
Int. Cl.[4] B24D *3/02*
U.S. Cl. 51—309 4 Claims

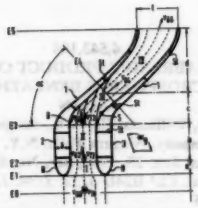
1. A vitrified grinding wheel composed of polycrystalline sintered aluminous abrasive grits and an inorganic glassy bond, said abrasive grits consisting essentially of noncellular submicron alpha alumina particles, said grits having a density of at least 95% of theoretical.

4,543,108

MIST ELIMINATOR FOR ELIMINATING DROPLETS FROM A GASEOUS FLOW

Dieter Wurz, Haid und Neu Str. 8, 7500 Karlsruhe, Fed. Rep. of Germany

Filed Aug. 24, 1984, Ser. No. 644,328
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1983, 3330533; Feb. 22, 1984, 3406425
Int. Cl.[4] B01D *45/08*
U.S. Cl. 55—1 33 Claims



1. A method of eliminating droplets from a gaseous flow that is guided through flow passageways including constrictions and deflecting sections, in which the walls of the flow passageways are oriented so that the eliminated liquid may flow off along said walls towards the inlet portion of the flow passageways under the action of gravity, characterized in that the flow in the flow passageways formed between adjacent profile elements upstream of the first deflecting sections is accelerated so that at the inlet to the deflecting section at least the small droplets achieve a velocity which is equal to or only comparatively slightly less than the velocity of the gaseous flow.

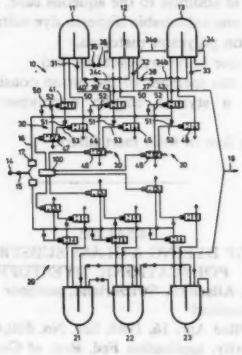
2. A mist eliminator for eliminating droplets from a gaseous flow, in which flow passageways including constrictions and deflecting sections are formed by means of profile elements on the walls of which the droplets are eliminated and which are oriented such that the eliminated liquid may flow along said walls towards the inlet portion of the flow passageways under the action of gravity, characterized in that a droplet acceleration section is provided between adjacent profile elements upstream of a first deflecting section effective to eliminate droplets, said droplet acceleration section being dimensioned so that at least small droplets are accelerated at the inlet to the first deflecting section to a velocity which differs only slightly from the gas flow velocity.

4,543,109

MOLECULAR SIEVE TYPE GAS SEPARATION SYSTEMS

Humphrey A. S. Hamlin, and James C. Taylor, both of Somerset, England, assignors to Normalair-Garrett (Holdings) Limited, Somerset, England

Filed Mar. 30, 1984, Ser. No. 595,304
Claims priority, application United Kingdom, Mar. 31, 1983, 8308948
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—25 4 Claims



1. In a method of operating a molecular sieve type gas separation system to deliver oxygen-enriched air to an outlet, the system including a pair of sieve bed sets and control means for cyclically subjecting each sieve bed to a charge/adsorption on-stream phase followed by a purge/desorption regeneration phase, the method including the steps of operating the individual sieve beds of each sieve bed set in overlapping sequence with respect to each other and operating the individual sieve beds of one set synchronously with respect to the sieve beds of the other set but in antiphase so that when one sieve bed in one set is switched to a charge/adsorption on-stream phase the corresponding sieve bed in the other set is switched to a purge/desorption regeneration phase whereby enhanced oxygen concentrations and smaller outlet pressure swings are achieved by the separation system.

2. A molecular sieve type gas separation system adapted to deliver oxygen-enriched air for breathing by aircrew of an aircraft by decreasing the nitrogen content of air fed into the system, comprising

two bed sets each comprising three molecular sieve beds;

a supply line for delivering air from an air supply source to the sieve beds;

a respective charge valve connecting a charge inlet port of each sieve bed with the supply line;

a respective vent valve connecting a vent port of each bed with ambient atmospheric pressure or a pressure related thereto;

a respective solenoid operated bleed switching valve connected with the charge and vent valves of each bed and adapted for switching the charge and vent valves between open and closed positions such that when the charge valve is open the vent valve is closed and vice versa;

a sequencer unit connected with the solenoid operated bleed switching valves and adapted to control the solenoid operated bleed switching valves to sequentially switch the charge and vent valves of the beds of each bed set between the open and closed positions such that the open period of a charge valve is equal to the open period of a vent valve and the open periods of the charge and vent valves of one of the beds in a bed overlap the closed periods of the charge and vent valves of the other beds in the bed set, the sequencer unit being further adapted to

control the solenoid operated bleed switching valves to switch the charge and vent valves of the beds of one bed set in synchronisation with the charge and vent valves of the beds of the other bed set but in anti-phase thereto.

4,543,110

METHOD AND PLANT FOR REHEATING FLUE GASES BEHIND A WET FLUE-GAS DESULFURIZATION PLANT

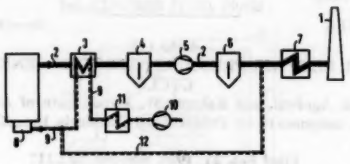
Reiner Engelhardt, Effeltrich, and Eberhard Wittchow, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 6, 1984, Ser. No. 628,247

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1983, 3324388

Int. Cl.⁴ B01D *53/14*

U.S. Cl. 55—27 **4 Claims**



1. Method for reheating flue gas which flows via a flue gas line into a wet gas desulfurization plant wherein the flue gas is desulfurized and cooled which comprises, admixing fresh air with the desulfurized flue gas, said fresh air, prior to said admixing, together with fresh air to be used for combustion to form flue gas is preheated by a third heating medium in a heat exchanger, the preheated fresh air from the heat exchanger thereafter flows through a flue gas-air preheater wherein preheated fresh air is further heated by heat exchange with the flue gas flowing into the flue gas desulfurization plant without the temperature falling below the dew point temperature of the flue gas before it enters the flue gas desulfurization plant, and wherein part of the heated fresh air is returned from the exit of the flue gas-air preheater to the input of the heat exchanger which is heated by the third medium.

4,543,111

DUST SEPARATOR

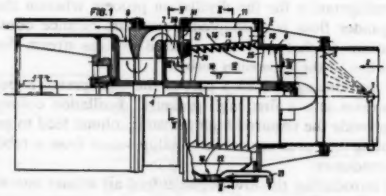
Josef Müller, and Johannes Wunder, both of Eisenerz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed May 24, 1983, Ser. No. 497,678

Claims priority, application Austria, Jun. 22, 1982, 2416/82

Int. Cl.⁴ B01D *47/00*

U.S. Cl. 55—230 **13 Claims**



1. Dust separator, in particular for mine ventilation, comprising a rotating centrifugal separator having at least one paddle wheel rotating within a stationary housing and equipped with a plurality of stages formed by radially extending paddles approximately located in axial planes and connected with their outer ends to co-rotating walls extending in circumferential direction, which walls, seen in axial section, are stepped like saw teeth, the steep flanks of the stages facing the air stream and including at their side facing the air stream an angle of at least 90 degrees with the axis and slots, between stages extending in circumferential direction and being contiguous with the steep flanks of the stages and the less inclined flanks of the stages being conical with a diameter increasing in flow direction, and further comprising at least one blower for supplying the air stream through the centrifugal separator and at least one spraying or atomizing means, arranged as seen in flow direction of the air upstream of the centrifugal separator, for spraying or atomizing water being supplied to the air stream entering the centrifugal separator, characterized in that the diameters of the stages stepped like saw teeth decrease in flow direction of the air from stage to stage, in that the axial length of each stage is maximally ¼ of the length of the centrifugal separator and in that the conveying action of a blower arranged at the exit end of the centrifugal separator is assisted by an axial blower arranged at the inlet end of the centrifugal separator.

4,543,112

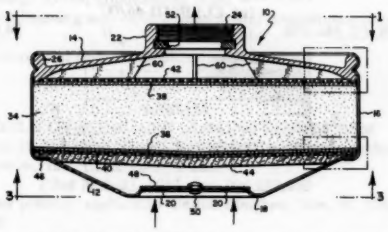
SORBENT TYPE FILTER ASSEMBLY FOR A RESPIRATOR AND METHOD OF MAKING SAME

Mark W. Ackley, E. Aurora, and Brian D. Szafranski, Lancaster, both of N.Y., assignors to Figgie International Inc., Willoughby, Ohio

Filed Apr. 30, 1984, Ser. No. 605,588

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—316 **16 Claims**



1. A method of assembling a sorbent type filter assembly comprising the following steps:

providing a canister shell having an inlet passageway in an end portion, a generally cylindrical portion, and a step between the end portion and the cylindrical portion;

inserting into said canister shell a first resilient perforated plate, a first retention filter, a relatively uniform sorbent bed, a second retention filter, and a second resilient perforated plate in the order listed, at least said sorbent bed and said retention filters extending to the periphery of the generally cylindrical portion and being generally planar when assembled, said first resilient perforated plate being supported by said step;

inserting a canister cover into said canister shell, said canister cover having an outlet passageway therein and a peripheral portion having a circumferentially extending groove on an exterior surface, the external diameter of the peripheral portion being substantially the same as the internal diameter of the generally cylindrical portion of the canister shell;

exerting a generally axial force onto said canister cover to place the sorbent bed under compression and to stress the first resilient perforated plate within its elastic limits; and

joining the parts together while said force is being exerted onto said canister cover by progressively forcing a portion of the cylindrical portion of the canister shell into said groove, whereby the sorbent bed is maintained under sufficient bed compression to maintain bed integrity in discriminating sorbent/gas systems subject to rough handling.

11. A sorbent type filter assembly for a respirator comprising:

a canister shell having a generally cylindrical portion and an end portion provided with an inlet passageway therein;

a sorbent bed disposed within said generally cylindrical portion;

retention means for retaining the sorbent bed in the canister shell, the retention means including a pair of oppositely disposed retention filters disposed adjacent the sorbent bed and a pair of oppositely disposed resilient perforated plates in intimate contact with surfaces of said pair of retention filters, one of said resilient plates being resiliently stressed in such a manner that it causes said retention means to maintain said sorbent bed in sufficient bed compression to maintain bed integrity in discriminating sorbent/gas systems subject to rough handling; and

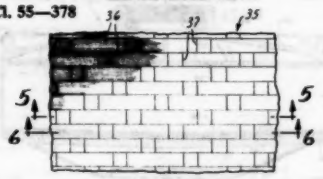
a canister cover which encloses the sorbent bed within said canister shell, said canister cover being provided with an outlet passageway therein and a peripheral surface in sealed engagement with the generally cylindrical portion.

4,543,113

UNIFORM MINIMUM-PERMEABILITY WOVEN FABRIC, FILTER, AND PROCESS THEREFOR

Roger J. Forester, and Lloyd R. White, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 10, 1984, Ser. No. 640,154
Int. Cl.[4] B01D *46/00*
U.S. Cl. 55—378 **24 Claims**



1. Woven ceramic fiber fabric having uniform gas permeability of less than 1.5 L/M/cm^2 and being capable of withstanding at least 10,000 cycles in a Bally TM Flexometer test without failure, said fabric being capable of maintaining its integrity for prolonged periods at temperatures of about 1150° C., and said fabric having essentially no visible spaces or openings present between the yarns at magnification of 7.5 times.

4,543,114

PIPELINE CONCAVE STRAINER

David L. G. Beattie; Herbert Bear, both of Edmonton, Canada, and Robin B. Willis, Houston, Tex., assignors to Porta-Test Systems, Ltd., Edmonton, Canada

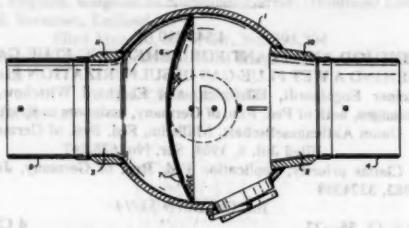
Filed Oct. 31, 1983, Ser. No. 547,533
Int. Cl.[4] B01D *35/02*
U.S. Cl. 55—418 **4 Claims**

1. A pipeline strainer, to be incorporated in a pipeline, which comprises:

a substantially spherical vessel having generally aligned inlet and outlet means adapted for connection with the pipeline ends; and

a substantially circular concave perforated plate extending transversely across the interior of the vessel and positioned between the inlet and outlet means, the plate's concave surface being its upstream surface;

said inlet means being a generally tubular, conical member connecting the upstream pipeline end with the interior of the vessel, said conical member being adapted to cause the



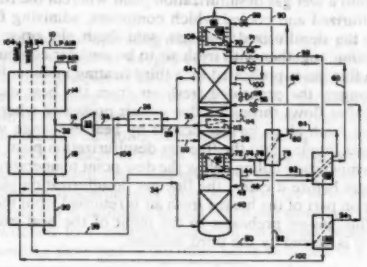
gas flow to diverge as it moves from the pipeline into the vessel.

4,543,115

DUAL FEED AIR PRESSURE NITROGEN GENERATOR CYCLE

Rakesh Agrawal, and Kenneth W. Kovak, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 21, 1984, Ser. No. 582,117
Int. Cl.[4] F25J *3/04*
U.S. Cl. 62—25 **19 Claims**



1. A process for the production of gaseous nitrogen by the low temperature distillation of air in two distillation columns comprising:

(a) producing two different pressure feed air streams by compression in order to have a low pressure feed air stream and a high pressure feed air stream;

(b) expanding a process stream through an expansion turbine to reduce its pressure and temperature so as to provide refrigeration for the distillation process wherein the expander flow is uncoupled from mass balance considerations so that only the required process stream flow is taken to the expansion turbine;

(c) introducing at least a part of the high pressure feed air stream into a first high pressure, distillation column to provide the required high pressure column feed to generate a low pressure column boilup vapor from a reboiler-condenser;

(d) introducing the low pressure feed air stream into a second, low pressure, distillation column;

(e) condensing a nitrogen reflux stream in the high pressure column by heat exchange of the nitrogen of the high pressure column against the bottom liquid of the low pressure column in said reboiler-condenser;

(f) removing nitrogen-rich liquid from the high pressure column, expanding it and introducing it into the low pressure column as reflux;

(g) removing a bottom stream from the high pressure col-

umn, expanding it and introducing it into the low pressure column;

(h) condensing a nitrogen reflux stream in the low pressure column in a vaporizer-condenser against bottom liquid from said column which is expanded to a lower pressure and temperature and introduced into the vaporizer-condenser, and

(i) removing a portion of the nitrogen overhead vapor from the low pressure column as a product.

4,543,116

WELDING AND FLUID TIGHTNESS PROCESS FOR THE PRODUCTION OF SENSORS

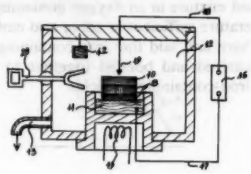
Claude Lombard, Le Chesnay, and Olivier Morvan, Toulouse, both of France, assignors to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed Nov. 28, 1983, Ser. No. 555,571

Claims priority, application France, Nov. 26, 1982, 82 19846

Int. Cl.⁴ C03B *23/20, 19/02*

U.S. Cl. 65—40 **6 Claims**



1. A process for sealing a silicon layer to at least a face of a layer of the vitrocrystalline material, which comprises:

stacking the silicon layer and the vitrocrystalline material layer together on the surface of a liquid metal bath so that a lower layer of said layers floats on a surface of said bath;

placing said bath and said layers within an enclosure;

heating said metal bath;

reducing the pressure within said enclosure; and

establishing a direct-current voltage between said metal bath and an upper layer of said layers so as to form an electrostatic seal between the layers.

4,543,117

METHOD FOR PRODUCING MOLTEN GLASS

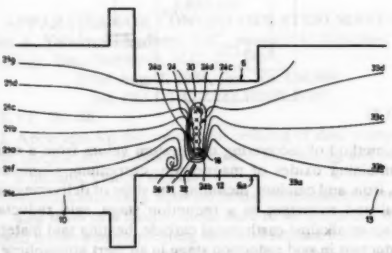
Paul Burget, Welkenraedt, Belgium, and Michel Zortea, Chalon sur Saone, France, assignors to Saint-Gobain Vitrage, Aubervilliers, France

Continuation of Ser. No. 241,093, Mar. 6, 1981, abandoned. This application Sep. 7, 1983, Ser. No. 530,029

Claims priority, application France, Mar. 11, 1980, 80 05405

Int. Cl.⁴ C03B *5/18, 5/04*

U.S. Cl. 65—135 **4 Claims**



1. A method for making molten glass in a melting furnace from a vitrifiable composition comprising:

(a) feeding the vitrifiable composition through a charging hole into a refining zone of the melting furnace, said refining zone equipped with a heating means for melting the vitrifiable composition;

(b) melting the vitrifiable composition in the refining zone to form a molton glass having a forward current and a countercurrent, said forward current flowing away from the charging hole on an upper surface of said molten glass and said countercurrent flowing beneath said forward current toward the charging hole;

(c) restricting the flow of said molten glass forward current by means of a corset interposed between said refining zone and a conditioning zone of said melting furnace, said corset having a plurality of agitating means for creating a continuous current in said molten glass and for opposing direct passage of said molten glass from said refining zone to said conditioning zone, where said agitating means define a narrow flow passage for said molten glass at the first side of the corset and a wide flow passage for said molten glass at the second side of the corset, and where said narrow passage is substantially narrower than said wide passage;

(d)operating said agitating means in such a manner that they will direct forward current of said molten glass by means of said agitating means toward said narrow passage;

(e) passing central streams of said molten glass forward current from said refining zone by action of said agitating means to said narrow passage and then to said conditioning zone;

(f) passing a second-side end stream of said molten glass forward current from said refining zone through said wide passage to said conditioning zone;

(g) conditioning said molten glass in said conditioning zone; and

(h) recovering said conditioned molten glass.

4,543,118

MOULD OPENING AND CLOSING MECHANISM

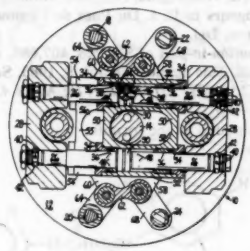
Hermann H. Nebelung, Zurich, Switzerland, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Nov. 21, 1983, Ser. No. 553,940

Claims priority, application United Kingdom, Nov. 30, 1982, 8234099

Int. Cl.⁴ C03B *9/347*

U.S. Cl. 65—360 **6 Claims**



1. A mould opening and closing mechanism for use in a glassware container manufacturing machine, the mechanism being operable to move a plurality of mould portions between mould open and mould closed positions thereof, each mould portion being mounted on a a mould portion carrier which is mounted for pivotal movement about a vertically-extending axis, the mechanism comprising a shaft associated with each mould portion carrier and mounted for turning movement about a vertically-extending longitudinal axis of the shaft, an arm fixed to and projecting from each shaft, a connection between each arm and its associated mould portion carrier such that, when the shaft is turned about its longitudinal axis,

the mould portion carrier is pivoted about its axis, and turning means operable to turn the shafts about their respective axes, wherein the turning means comprises a horizontally-extending rod associated with each shaft, a piston fixed to a central region of each rod, a cylinder slidably mounted on each rod within which cylinder the piston fixed to the rod is received so that, when fluid under pressure is introduced into the cylinder, the cylinder is caused to slide along the rod, a second arm fixed to and projecting from the shaft, and a third arm pivotally connected to said second arm and the cylinder such that, when the cylinder slides along the rod, the shaft is caused to turn about its longitudinal axis.

4,543,119

METHOD FOR PROMOTING CROP GROWTH

Masanori Hikawa, Osaka, and Ippei Toyoda, Urayasu, both of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

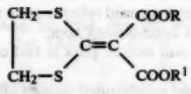
Filed Jan. 25, 1983, Ser. No. 460,792

Claims priority, application Japan, Feb. 1, 1982, 57-14535

Int. Cl.⁴ A01N *43/02*

U.S. Cl. 71—90 **3 Claims**

1. A method for promoting crop growth, which comprises applying to the soil an effective amount of a compound represented by the formula (I):



wherein R and R^1, which are the same or different, are each a lower alkyl group, whereby the crop growth is effected by root growth stimulation.

4,543,120

ALKYL SULFONYL SULFONAMIDES

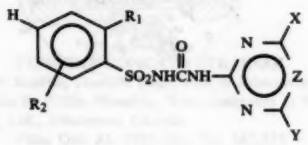
George Levitt, Wilmington, Del., and Anthony D. Wolf, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 407,645, Aug. 12, 1982, abandoned. This application Jul. 8, 1983, Ser. No. 511,471

Int. Cl.⁴ C07D *251/52, 251/18;* A01N *43/68, 43/70*

U.S. Cl. 71—93 **21 Claims**

1. A compound of the formula



wherein

R_1 is $S(O)_nR_3$;

R_2 is H, F, Cl, Br, CH_3, OCH_3, CF_3 or NO_2;

R_3 is C_1–C_4 alkyl, C_3–C_4 alkenyl or cyclopropylmethyl;

n is 0, 1 or 2

X is CH_3, C_2H_5, CH_3O, C_2H_5O, or CH_2OCH_3;

Y is NH_2, $NHCH_3$ or $N(CH_3)_2$; and

Z is N;

and their agriculturally suitable salts; provided that when R_3 is C_1–C_3 alkyl and Y is NH_2 or $NHCH_3$, then X is other than Cl, CH_2CH_3 or CH_2OCH_3.

4,543,121

METHOD OF REDUCING HYDROCARBON EMISSIONS OCCURRING DURING IRON ORE SINTERING OPERATIONS

Ralph F. Weidner, Chagrin Falls; Carl W. Regutti, Shaker Heights, and Chien W. Liao, Beachwood, all of Ohio, assignors to The Mogul Corporation, Chagrin Falls, Ohio

Filed Mar. 12, 1984, Ser. No. 588,780

Int. Cl.⁴ C22B *1/16*

U.S. Cl. 75—5 **16 Claims**

1. A method of reducing the hydrocarbon content of vapors produced during the agglomeration of fine iron-containing particles by sintering them in the presence of a carbonaceous material to produce a coarse iron-containing mass which comprises:

providing a mixture of fine iron-containing particles and a combustible carbonaceous material;

contacting said mixture with an effective amount of a metal containing hydrocarbon oxidation catalyst; and

heating said mixture in an oxygen containing atmosphere to a temperature sufficient to cause said carbonaceous material to burn and said fine iron-containing particles to become sintered and bonded together to form a mass of coarse iron-containing particles.

4,543,122

MAGNESIUM PRODUCTION

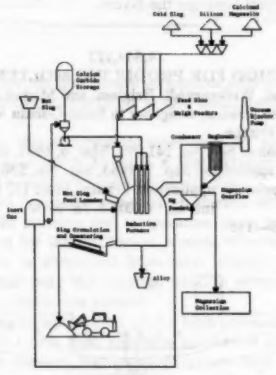
Johannes J. Bodenstein, Transvaal, and Leslie J. Farrell, Johannesburg, both of South Africa, assignors to Johannesburg Consolidated Investment Company Limited, Transvaal, South Africa

Filed Oct. 3, 1984, Ser. No. 657,180

Claims priority, application South Africa, Oct. 19, 1983, 83/7783

Int. Cl.⁴ C22B *26/22*

U.S. Cl. 75—0.5 B **12 Claims**

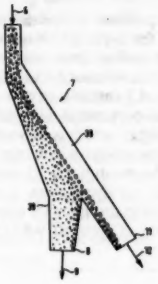


1. A method of recovering magnesium values from a material containing oxides of magnesium, chromium, aluminum, silicon, iron, and calcium, including the steps of delivering said material and reductant to a reduction stage, said reductant including an alkaline earth metal carbide, heating said material and reductant in said reduction stage in an inert atmosphere to reduce the magnesium oxide and produce vaporized magnesium, feeding vaporized magnesium to a condenser and converting the vaporized magnesium directly to a powder form in said condenser.

4,543,123
PROCESS FOR THE DIRECT PRODUCTION OF SPONGE IRON PARTICLES AND LIQUID CRUDE IRON FROM IRON ORE IN LUMP FORM

Bogdan Vuletic, Düsseldorf, Fed. Rep. of Germany, assignor to Korf Engineering GmbH, Linz, Austria

Filed Nov. 14, 1983, Ser. No. 551,174
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1982, 3242232; Aug. 5, 1983, 3328373
Int. Cl.[4] C21B *13/06*
U.S. Cl. 75—34 24 Claims



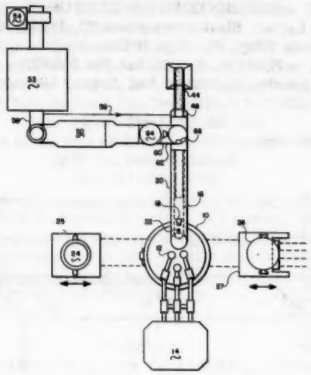
1. In a process for the direct production of sponge iron particles and liquid crude iron from iron ore in lump form, wherein the iron ore is reduced to sponge iron particles in a direction reduction means by a hot reducing gas, and sponge iron particles which are discharged from the direct reduction means are fed to a melting gasifier in which the heat required for melting the sponge iron, and reducing gas, are produced from coal which is introduced into the melting gasifier and oxygen-bearing gas is blown thereinto, at least a part of the reducing gas, after cooling to a temperature necessary for reduction being passed into the reduction zone of the direct reduction means, the improvement comprising separating the sponge iron particles which are discharged from the direct reduction means into a fine grain fraction and a coarse grain fraction and passing only the fine grain fraction to the melting gasifier.

4,543,124
APPARATUS FOR CONTINUOUS STEELMAKING

John A. Vallomy, Charlotte, N.C., assignor to Intersteel Technology, Inc., Matthews, N.C.

Filed Aug. 2, 1984, Ser. No. 636,944
Int. Cl.[4] C21C *7/00*; H05B *7/18*
U.S. Cl. 75—46 14 Claims

1. Apparatus for the continuous refining of steel comprising:
an electric arc steelmaking furnace for melting and refining a metallic charge therein;
electrodes extending into said furnace a distance beneath the slag level of a molten metal bath to be contained therein;
feed means communicating with said furnace for introducing charge materials to the interior of said furnace;
means communicating with said feed means for preheating charge materials within said feed means;
gas seal means for providing a controlled atmosphere within said feed means;
gas injection means communicating with said furnace beneath the normal molten metal bath level; and

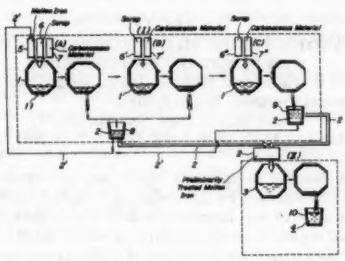


means for tilting said furnace up to 15° from the vertical without removing said electrodes, for the purposes of slagging and tapping.

4,543,125
PROCESS OF MAKING STEEL IN CONVERTER USING A GREAT AMOUNT OF IRON-BEARING COLD MATERIAL

Fumio Sudo; Tetsuya Fujii; Yoshiei Kato; Sumio Yamada, and Kanji Emoto, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Sep. 12, 1984, Ser. No. 649,918
Claims priority, application Japan, Feb. 16, 1984, 59-26131
Int. Cl.[4] C21C *7/00*
U.S. Cl. 75—51.5 3 Claims



1. A process for producing a steel in a converter using a substantial amount of an iron-bearing cold material, which comprises using at least two converters, supplying an amount of the iron-bearing cold material which corresponds to about two-thirds and more of the whole iron charge, and a carbonaceous material into one of the converters in the presence of at least one selected from the group consisting of a molten iron and a preliminarily treated molten iron, the preliminarily treated molten iron being formed by melting scrap with molten iron in the converter, melting the iron-bearing cold material by blowing oxygen to obtain a preliminarily treated molten iron containing not less than 2.5 weight % of carbon, and refining said preliminarily treated molten iron in the other converter under oxygen-blowing to obtain a molten steel having a given composition.

4,543,126

METHOD OF AND ARRANGEMENT FOR DETERMINING LOADING CAPACITY OF COATING ELEMENTS FOR STRUCTURES

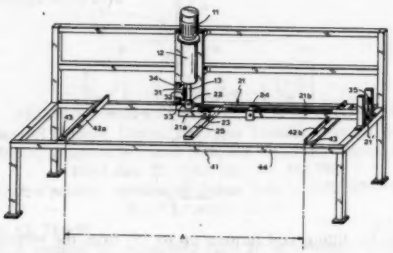
Eberhard Layher, Blankenhornstrasse 17, D-7129 Güglingen-Eibensbach Wtbg., Fed. Rep. of Germany

Filed Oct. 7, 1983, Ser. No. 540,609

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237259

Int. Cl.⁴ G01N *3/20*

U.S. Cl. 73—852 **20 Claims**



1. A method of determining loading capacity of coating elements, for example boards or frame panels, comprising the following steps: supporting a coating element to be tested at its both ends;

placing a force bar along a central transverse line of the coating element, wherein the force bar supports a pivot axle of a two-armed lever;

producing by one arm of the lever a moment continuously growing from zero, whereas the other arm of the lever serves for producing a fixedly adjustable counter moment corresponding to the permissible maximum loading of the coating element; and

recording a bending of the coating element in the region of the permissible maximum loading.

4,543,127

ORGANOTIN-FUMED SILICA DERIVATIVES FOR USE AS BIOCIDAL COMPOSITIONS

Edward R. Falardeau, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 7, 1984, Ser. No. 607,377

Int. Cl.⁴ A01N *9/00*; C08K *5/54*, *5/57*; C09D *5/14*

U.S. Cl. 106—18.29 **11 Claims**

1. A biocidal composition comprising an organotin compound characterized by the structural formula R_3SnX wherein R is an alkyl or aryl functionality and X is an anionic radical; and said organotin compound is covalently bonded to reactive silanol sites present on the surface of a silica compound to form a solid biocidal particle wherein the maximum mmol of said organotin compound is no more than the mmol of said silanol sites present on said silica surface.

2. The biocidal composition of claim 1 which additionally includes a carrier or film-forming vehicle containing said solid biocidal particle.

7. A method of protecting a surface from fouling organisms which comprises admixing in a carrier or film-forming vehicle a solid biocidal particle to form an admixture wherein said solid biocidal particle comprises an organotin compound characterized by the structural formula R3SnX wherein R is an alkyl or aryl functionality and X is an anionic radical; and said organotin compound is covalently bonded to reactive silanol sites present on the surface of a silica compound wherein the maximum mmol of said organotin compound is no more than the mmol of said silanol sites present on said silica surface, and treating said surface with said admixture.

4,543,128

FILLERS DYED WITH POLYCATIONIC DYESTUFFS USEFUL FOR COLORING PAPER AND NON-WOVEN FABRICS

Juerg Troesch, Allschwil, and Walter Portmann, Gelterkinden, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 482,175, Apr. 5, 1983, abandoned. This application Aug. 23, 1983, Ser. No. 525,834

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1982, 3212635; Aug. 28, 1982, 3232110

Int. Cl.⁴ C09D *11/00*; C08J *3/00*; C08K *5/34*

U.S. Cl. 106—23 **28 Claims**

1. A colored composition comprising an aqueous paste or dispersion of a filler for paper or for nonwoven fabric, which filler has been dyed with at least one water-soluble polycationic dyestuff which is substantive to the filler and contains, per molecule, at least 1.3 cationic groups, said cationic groups being quaternary or protonated nitrogen atoms and being present in a total number which is at least one more than the total number of anionic groups which may be present, with the proviso that where the dyestuff is a 1:2 metal complex containing two dyestuff units per metal atom, each dyestuff unit contains at least 1.3 cationic groups, said composition containing no significant quantity of dyestuff which is not fixed on the filler.

4,543,129

APPARATUS FOR REDUCING THE LIQUID CONTENT OF SUGAR CANE BAGASSE

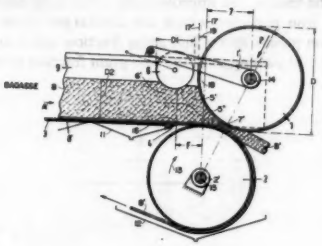
Willy Kaether, c/o BMA; Post Box 32 25, 33 Brunswick, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 513,256, Jul. 13, 1983, Pat. No. 4,542,641, which is a continuation of Ser. No. 267,246, May 26, 1981, abandoned. This application Jan. 24, 1984, Ser. No. 573,461

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021311

Int. Cl.⁴ C13D *1/02*

U.S. Cl. 127—5 **10 Claims**



1. An apparatus for reducing the liquid content of sugar cane bagasse, comprising conveyor means for moving said bagasse in a travel direction defined by said conveyor means with a given travelling speed, support means including screen means and support end means having a downstream edge, said support means being means for supporting said conveyor means, compacting means for compacting said bagasse, the compacting means being located above said support end means and arranged to contact the bagasse for subjecting said bagasse to a preliminary compacting pressure, said support end means and said compacting means defining a first liquid removal zone, roller means comprising an upper roller arranged to contact an upper surface of said conveyed bagasse downstream of said compacting means and a lower roller arranged to support said bagasse downstream of said support end means, said upper and lower rollers facing each other with a spacing between the surfaces of said upper and lower rollers, wherein said lower roller is located below said bagasse with a first horizontal

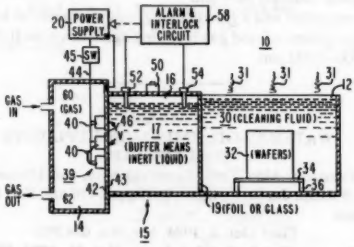
spacing between said downstream edge of said support end means and the rotational axis of said lower roller for defining a screenless section between said downstream edge and the bagasse supporting surface of said lower roller, said bagasse passing along said screenless section until it is supported again by said lower roller, said upper roller being horizontally displaced with a second horizontal spacing between its rotational axis and the rotational axis of said lower roller, said upper and lower rollers and said compacting means defining a second liquid removal zone located above said screenless section for subjecting said bagasse to a compression in said second liquid removal zone, said spacing between the surfaces of said upper and lower rollers defining a third liquid removal zone downstream of said second liquid removal zone for subjecting said bagasse body to a further compression in said third liquid removal zone; and compacting means, said support end means, and said upper and lower rollers being so arranged that said bagasse during its passage through said three zones is first bent downwardly and then upwardly to induce shearing forces within the bagasse, and wherein said first, second and third zones have a constant total length so that with regard to said travelling speed of the bagasse the relationship $t > D/K$ is satisfied, wherein t is the time in seconds of the bagasse travel through said three zones, D is the diameter of said upper roller in mm, and K is a constant.

4,543,130

MEGASONIC CLEANING APPARATUS AND METHOD

Stanley Shwartzman, Somerville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 28, 1984, Ser. No. 645,067
Int. Cl.[4] B08B *3/12*
U.S. Cl. 134—1 **5 Claims**



1. A method of cleaning a surface of an article in a cleaning fluid in a first chamber by vibrating the cleaning fluid at a high frequency by an electrically energized transducer mounted on a vibratory electrically conductive membrane in a third closed chamber comprising the step of isolating the transducer and the membrane from cleaning fluid vapors to prevent thereby accidental explosions or fires by positioning a second closed chamber containing inert liquid between said first and third chambers, said second chamber having a vibratory wall in common with each of said first and third chambers.

4,543,131

AQUEOUS CROSSLINKED GELLED PIGS FOR CLEANING PIPELINES

Robert J. Purinton, Jr., Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 241,962, Mar. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 96,106, Nov. 20, 1979, abandoned, Ser. No. 106,784, Dec. 26, 1979, abandoned, and Ser. No. 122,536, Feb. 19, 1980, Pat. No. 4,254,559. This application Mar. 19, 1984, Ser. No. 591,080
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.[4] B08B *9/04*
U.S. Cl. 134—8 **18 Claims**

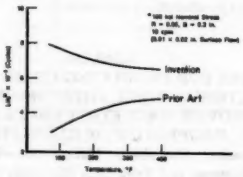
1. A method of cleaning the interior of a pipeline comprising passing an aqueous gel pig containing an aqueous crosslinked gelled galactomannan gum, or derivative thereof, through said pipeline in amounts and at a rate sufficient to remove contaminants from the interior of said pipeline.

4,543,132

PROCESSING FOR TITANIUM ALLOYS

Douglas M. Berczik, West Palm Beach; George Brodi, Palm Beach Gardens, and Thomas E. O'Connell, North Palm Beach, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 31, 1983, Ser. No. 547,270
Int. Cl.[4] C22F *1/18*
U.S. Cl. 148—11.5 F **11 Claims**



1. Method for improving the crack growth behavior of alpha-beta titanium material containing substantial amounts of beta stabilizers and at least 3% Mo, and having a beta transus temperature, including the steps of

a. forging the material above the beta transus an amount sufficient to produce recrystallization
b. cooling the material, through the beta transus, at a rate of from about 20° to about 100° F. per minute
c. heat treating the material at a temperature between about 50° and about 150° F. below the beta transus
d. cooling the alloy at a rate equal to or in excess of that produced by air cooling
e. aging the material.

4,543,133

PROCESS FOR PRODUCING SINGLE CRYSTALLINE SEMICONDUCTOR ISLAND ON INSULATOR

Ryoichi Mukai, Kawaguchi, Japan, assignor to Fujitsu Limited, Kawagawa, Japan

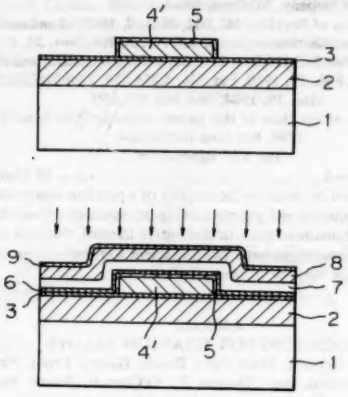
Filed Apr. 27, 1984, Ser. No. 604,719
Claims priority, application Japan, Apr. 30, 1983, 58-076566
Int. Cl.[4] H01L *21/263;* C30B *13/06;* B05D *3/06*
U.S. Cl. 148—1.5 **6 Claims**

1. A process of producing a single crystalline semiconductor island on an insulator, comprising the steps of:

forming a semiconductor island of a nonmonocrystalline semiconductor, having upper and side surfaces, on an insulator;
forming an energy-absorbing cap layer which coats at least said upper and side surfaces of said semiconductor island, said energy-absorbing cap layer being capable of absorb-

ing radiant energy and generating heat enough to melt said semiconductor island; and

irradiating said energy-absorbing cap layer with an energy



beam of radiant energy sufficient to melt and transform said coated nonmonocrystalline semiconductor into a single crystalline semiconductor by the heat generated in said energy-absorbing cap layer.

4,543,134

PROCESS FOR PRODUCING GRAIN-ORIENTED ELECTRICAL STEEL SHEET HAVING BOTH IMPROVED MAGNETIC PROPERTIES AND PROPERTIES OF GLASS FILM

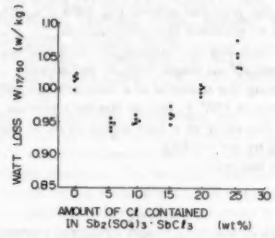
Osamu Tanaka; Shozaburo Nakashima; Takashi Nagano; Tomoji Kumano, and Yoshitaka Hiromae, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 2, 1984, Ser. No. 667,743

Claims priority, application Japan, Jan. 9, 1984, 59-810

Int. Cl.⁴ H01F *1/04*

U.S. Cl. 148—113 **3 Claims**



1. A process for producing a grain-oriented electrical steel sheet having both improved magnetic properties and properties improved glass film wherein a hot-rolled steel strip containing from 0.030 to 0.100 wt % of C, from 2.5 to 4.0 wt % of Si, and either or both of a sulfide and a nitride as an inhibitor against growth of primary grains is, if necessary annealed, and cold-rolled once or twice or more with an intermediate annealing, to obtain a final gauge, a decarburization annealing is thereafter carried out, resulting in formation of an oxide film comprising SiO_2 on the surface of the steel sheet an annealing separator mainly comprising MgO is applied on the oxide film, and, a finishing annealing is thereafter carried out, characterized in that the annealing separator further comprises from 0.05 to 2.0 parts by weight of antimony sulfate based on 100 parts by weight of the magnesium oxide, and at least one chloride selected from the group consisting of Sb, Sr, Ti, and Zr chlorides in a chlorine amount of from 5 to 20% by weight based on 100% of the chlorides and the antimony sulfate.

4,543,135

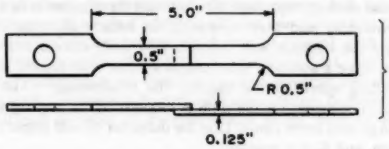
NICKEL HIGH-CHROMIUM BASE BRAZING FILLER METAL FOR HIGH TEMPERATURE APPLICATIONS

Debasis Bose, Randolph, and Alfred Freilich, Livingston, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 15, 1982, Ser. No. 441,465

Int. Cl.⁴ C22C *19/05*

U.S. Cl. 148—403 **5 Claims**



1. A homogeneous ductile brazing foil having a composition consisting essentially of 17.5 to 18.5 atom percent chromium, 12.5 to 13.5 atom percent silicon and 5 to 6 atom percent boron, the balance being nickel and incidental impurities.

4,543,136

WATER-IN-OIL EMULSION EXPLOSIVE COMPOSITION

Kohji Edamura; Akio Torii; Katsuhide Hattori, and Hiroshi Sakai, all of Chita, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,265

Claims priority, application Japan, Sep. 1, 1983, 58-158960

Int. Cl.⁴ C06B *45/02*

U.S. Cl. 149—21 **4 Claims**

1. A water-in-oil emulsion explosive composition comprising:

a continuous phase consisting of a carbonaceous fuel component;

a disperse phase consisting of an aqueous solution of inorganic oxidizer salt; and

an emulsifier and a gas-retaining agent, wherein at least 30% by volume of said gas-retaining agent has a particle size of 600–3,000 μm.

4,543,137

WATER-IN-OIL EMULSION EXPLOSIVE COMPOSITION

Koji Edamura; Akio Torii; Kazuyuki Sato, and Hiroshi Sakai, all of Aichi, Japan, assignors to Nippon Oil and Fats Co. Ltd., Japan

Filed Oct. 2, 1984, Ser. No. 656,892

Claims priority, application Japan, Oct. 21, 1983, 58-196180

Int. Cl.⁴ C06B *45/02*

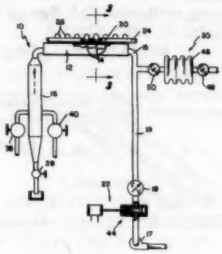
U.S. Cl. 149—21 **12 Claims**

1. In a water-in-oil emulsion explosive composition comprising a continuous phase consisting of a carbonaceous fuel component; a disperse phase consisting of an aqueous solution of inorganic oxidizer salt; an emulsifier and a gas-retaining agent, the improvement comprising the explosive composition containing, as the gas-retaining agent, 0.05–40% by weight based on the total amount of explosive composition of bubble assemblies, each bubble assembly being one particle consisting of a large number of bubbles agglomerated into the particle.

4,543,138
CAPSULE-SEALING METHOD AND APPARATUS

David E. Bollinger, Greenwood, and Samuel L. McCormick, Indianapolis, both of Ind., assignors to Eli Lilly & Company, Indianapolis, Ind.

Filed Jul. 7, 1983, Ser. No. 511,553
Int. Cl.[4] B29C *27/02*
U.S. Cl. 156—69 23 Claims



1. An apparatus for sealing a two-piece ingestable capsule consisting essentially of a body member telescopically received into a cap member, the apparatus comprising

a chamber having nozzle means for dispensing the contents of the chamber,

supply means for supplying hot, moist air of a controlled consistency to the chamber,

regulating means for regulating the average pressure within the chamber such that said average pressure is slightly below that of the ambient atmosphere,

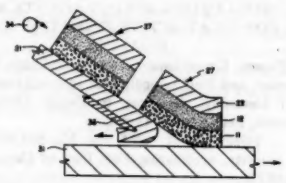
positioning means for positioning a cap member adjacent to the nozzle means, and

control means for controlling the flow of the moist air from the chamber through the nozzle means into an adjacent cap member by momentarily increasing the pressure within the chamber.

4,543,139
RELEASABLE CLOSURE FOR BAGS AND CONTAINERS

Melvin S. Freedman, Beachwood, and Paul H. Hartman, Chardon, both of Ohio, assignors to Avery International Corporation, Pasadena, Calif.

Filed Sep. 17, 1984, Ser. No. 651,443
Int. Cl.[4] B32B *31/00*
U.S. Cl. 156—152 14 Claims

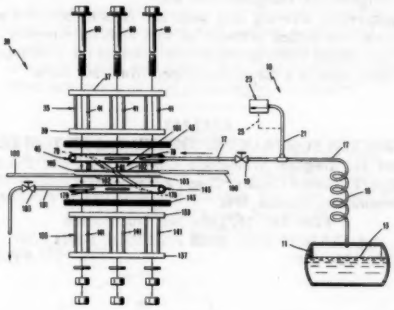


1. A packaging method which provides for end use resealing of a package made of a substrate material comprising the steps of positioning on a release liner adjoining strata of pressure-sensitive adhesive, a first outermost of said strata having a relatively high adhesion to said substrate material and a second outermost of said strata having a relatively low adhesion to said substrate material, transferring said adjoining strata of adhesive onto a first portion of said substrate material of said package with said first outermost stratum permanently contacting said substrate to establish a permanent fastener joint at the interface between said first portion of said substrate material and the permanently adhered surface of said first outermost stratum, closing or reclosing said package to initially establish a reseal joint at an interface between some other portion of said substrate material of said package and the reseal surface of said second outermost stratum, gradually and progressively mixing said strata by reopening and reclosing said package at the point of end use to induce relative and intermixing flow between said strata and (1) drive some of the adhesive of another stratum or strata toward said reseal surface of said second outermost stratum to compensate for the adverse effect of contamination on reseal adhesion at said surface and (2) combine the strata to a relatively deep thickness of mixing to increase the adsorption of contaminants, said relative and intermixing flow stopping short of the boundary layer at the permanently adhered surface of said first outermost stratum whereby initial adhesive strength is maintained at the permanent fastener joint.

4,543,140
STEAM SACK VULCANIZING METHOD

John G. Price, 173 Tensaw Rd., Montgomery, Ala. 36117

Filed Jul. 9, 1984, Ser. No. 629,052
Int. Cl.[4] B32B *31/20;* B29C *17/00*
U.S. Cl. 156—157 9 Claims



1. A method of vulcanizing a splice area on a rubber belt comprising the steps of:

(a) providing a pair of steam sacks;

(b) inserting said splice area between said steam sacks;

(c) supplying steam to said steam sacks at a predetermined temperature and pressure; and

(d) vulcanizing said splice area through exposure to said steam at said predetermined temperature and pressure, said steam being the sole medium providing heat and pressure to said splice area.

4,543,141
METHOD OF MAKING ELASTIC DIAPERS, APPARATUS THEREFOR, AND PRODUCT

John J. Bradley, Green Bay, and Debra K. Hansen, Maribel, both of Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Filed Dec. 27, 1983, Ser. No. 565,227
Int. Cl.[4] A61F *13/16*
U.S. Cl. 156—164 12 Claims

9. A method of manufacturing an elastic leg band disposable diaper comprising:

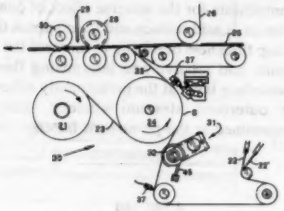
advancing a moisture impervious web toward a ribbon uniting station,

advancing a pair of stretched, flat faced elastic ribbons toward said station and prior to reaching said station,

applying a continuous stripe of adhesive to one face of each of said ribbons,

V-folding longitudinally spaced portions of each of said ribbons in synchronization to bring the parts of said one face into confronting relation and to provide a series of longitudinally spaced non-folded portions of said ribbon,

securing in synchronism at said station said non-folded portions to said web,



intermittently supplying absorbent batts to said web and thereafter applying a moisture pervious web to said batts and web and securing both of said webs together along longitudinal, marginal lines, and

transversely severing said webs and ribbons between adjacent non-folded portions of said ribbons whereby said non-folded portions selectively contract the crotch-providing area of a diaper developed from said webs.

4,543,142

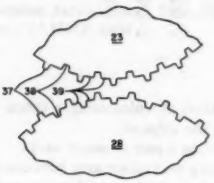
PROCESS FOR MAKING NESTED PAPER TOWELS

Daniel H. Kuepper, Winnebago County, Wis., and Peter J. Allen, Litchfield County, Conn., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 16, 1984, Ser. No. 600,856

Int. Cl.[4] B31F *1/20*; B32B *7/14, 3/00*; B29H *7/04*

U.S. Cl. 156—209 **6 Claims**



1. A process for producing a two-ply nested paper towel comprising:

(a) partially conforming a first ply to the surface of a first roll having alternating raised male elements and recessed female elements separated by neutral shoulders, wherein said first ply substantially conforms to the male elements and neutral shoulders but substantially bridges the female elements;

(b) partially conforming a second ply to the surface of a second steel roll having alternating raised male elements and recessed female elements separated by neutral shoulders, wherein said second ply substantially conforms to the male elements and neutral shoulders but substantially bridges the female elements;

(c) applying adhesive to portions of the first ply which are in contact with the raised male elements of the first roll; and

(d) partially engaging the first and second rolls wherein the adhesive-containing portions of the first ply press against the bridged portions of the second ply, thereby causing ply attachment and producing a nested paper towel.

4,543,143

PROCESS AND APPARATUS FOR THE COVERING OF PLAYING BALLS

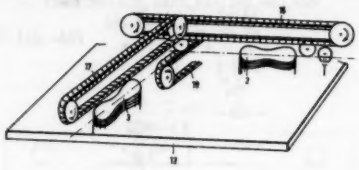
Dietmar Siebertz, Am Heinichenberg 9, D-6454 Bruchkoebel 1, Fed. Rep. of Germany, and Stephan Siebertz, Troisdorf, Fed. Rep. of Germany, assignors to Dietmar Siebertz, Fed. Rep. of Germany

Continuation of Ser. No. 436,295, Oct. 25, 1982, abandoned. This application Oct. 29, 1984, Ser. No. 666,121

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1981, 3142065; Jul. 29, 1982, 3228341

Int. Cl.[4] B29C *17/04*

U.S. Cl. 156—213 **13 Claims**



7. An apparatus for the covering of playing balls comprising:

a work surface;

a first rolling line on said work surface;

a second rolling line on said work surface at an angle of 90° to said first work surface;

an opening in the work surface at each of said rolling lines;

a magazine arranged in each of said openings, said magazine holding a plurality of cover members;

means for successively lifting the contents of each magazine into the rolling line a distance equal to the thickness of one over member;

a feeder conveyor equipped with cups open in the downward direction for receving ball cores;

means for guiding the ball cores to be covered along said first and second rolling lines, said guiding means including two link belts, the first link belt being arranged above said first rolling line and the second link belt being arranged above said second rolling line, each link belt comprising an endless contact pressure and transport belt with grooved links complementing each other to form a guide belt for the ball cores; and

raising means under said guiding means for raising said ball cores from said feeder conveyor into contact with said guiding means.

4,543,144

AQUEOUS POLYURETHANE COMPOSITIONS CONTAINING CROSSLINKING AGENTS AND THEIR USE FOR HEAT-ACTIVE ONE-COAT REVERSE COATING

Wilhelm Thoma, Leverkusen; Klaus Nachtkamp, Cologne; Walter Schröer, and Rolf Langel, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 11, 1984, Ser. No. 599,028

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313237

Int. Cl.[4] B44C *1/00*

U.S. Cl. 156—230 **16 Claims**

1. An aqueous, crosslinker-containing coating composition having a solids content of about 20 to 60% by weight and based on polyurethane dispersion which comprises

(I) 100 parts of solids of at least one aqueous polyurethane dispersion containing

(A) from about 43 to 100% by weight of a dispersed polyurethane containing lateral OH-groups and

(B) from 0 to about 57% by weight of a dispersed polyurethane without lateral OH-groups and

(II) from about 3 to 50 parts of solids, based on the solids of I, of a crosslinker combination of

(C) from about 2.5 to 90% by weight of a formaldehyde resin and

(D) from about 10 to 97.5% by weight of a blocked polyisocyanate.

15. A process for the production of a coating using the heat-activated, one-coat reverse coating process which comprises

(a) applying the coating composition of claim 1 to a temporary support,

(b) drying said coating composition,

(c) laminating a textile substrate onto the dry coating composition at elevated temperature and pressure and

(d) crosslinking said dry coating composition at elevated temperature.

4,543,145

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF SINGLE-PLY OR MULTI-PLY WEBS OF HEAT-CURABLE RESIN

Peter Schnell, Absam; Gustav Bihlmayer, Steyr, and Dietrich Daume, Linz, all of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

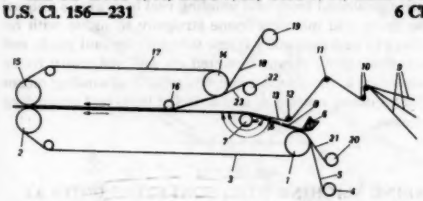
Filed Oct. 16, 1980, Ser. No. 197,413

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942413

The portion of the term of this patent subsequent to Aug. 24, 2000, has been disclaimed.

Int. Cl.⁴ B44C *1/00;* **B65C** *9/25;* **C09J** *5/00;* **B28B** *9/00*

U.S. Cl. 156—231 **6 Claims**



1. A process for the continuous preparation of a single-ply or multi-ply reinforced web of a heat-curable resin which comprises applying a continuous resin film, by doctoring, on to a travelling web of a separating film or a film impermeable to synthetic resin, which web, in its travel, forms an obtuse angle α, with its apex at the top, and runs substantially horizontally after passing the apex, the resin film being applied before the apex is reached and the web, carrying the resin film being combined, at the apex, with a pre-tensioned web, which also runs at an obtuse angle β with its apex at the top, of a fiber material or absorbent foam, the angle β being greater than the angle α but less than 180°, and having its apex, and its second viewed in the direction of travel substantially horizontal arm in common with the angle α and subsequently curing the resin-carrying web thus formed under pressure.

4,543,146

WRINKLE PREVENTION IN GLASS/PLASTIC COMPOSITE LENSES

Donald H. Petcen, Colonial Heights, Va., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Division of Ser. No. 487,658, Apr. 22, 1983, Pat. No. 4,494,344.

This application Oct. 1, 1984, Ser. No. 656,811

Int. Cl.⁴ B32B *31/20*

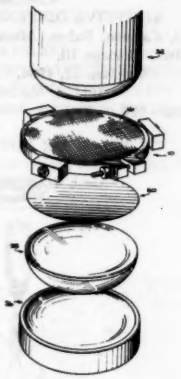
U.S. Cl. 156—242 **9 Claims**

1. In a method of producing glass-plastic composite ophthalmic lenses, of the type wherein

a flat plastic wafer is pre-positioned over an optically ground glass lens,

the pre-positioned glass-plastic is placed into a lens mold or holder having a concave optical surface and

an effective force is exerted against said flat plastic wafer by plunger means to effect lamination of said glass-plastic composite,



the improvement comprising: superimposing over said mold or holder a wrinkle preventor device comprising an open outer ring and an inner ring having a stretched elastic material thereon so that exertion of force by said plunger means is against said elastic stretched material to accomplish lamination of said glass-plastic composite.

4,543,147

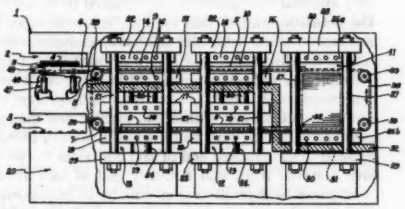
LAMINATING PROCESS AND APPARATUS

Vincent H. Noto, and Stanley Yalof, both of San Diego, Calif., assignors to Tetrahedron Associates, Inc., San Diego, Calif.

Filed Aug. 20, 1984, Ser. No. 642,545

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—288 **27 Claims**



1. A process for sequentially forming a series of laminated samples, comprising passing samples one after the other at predetermined intervals through a series of laminating steps

(a) supplying sample materials to a first heating press;

(b) heating and pressing a sample for the predetermined interval in the first press;

(c) passing the sample to the first level of a stack in a stacking press;

(d) passing the sample through the various levels of the stack in the press and heating and pressing it for the predetermined interval at each level;

(e) passing the sample from the last level of the stack to a cooling press;

(f) cooling the sample for the predetermined interval in said cooling press; and

(g) removing the sample from the cooling press,

said samples being passed one after the other from each step to the next subsequent step simultaneously at said

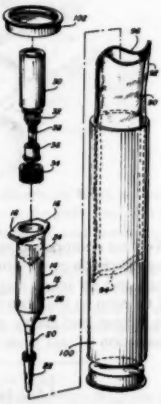
predetermined intervals such that samples are removed from said cooling press at a rate equal to said predetermined interval.

4,543,148

ADHESIVE DISPENSING SYSTEM

Chester O. Carlson, Salem, Mass., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jun. 22, 1984, Ser. No. 623,694
Int. Cl.⁴ A61M *5/315*
U.S. Cl. 156—314 **13 Claims**



1. A system for bonding plastic and/or metal workpieces by utilization of a two part permanent adhesive including sealable packaging means containing: a syringe member having a delivery end and an actuating end, a piston positioned in said syringe and spaced from said delivery end to form a cavity having a predetermined volume, said cavity housing an adhesive material, a capped elongated container having a complimentary external configuration and adapted to be accepted within the actuating end of said syringe, said container housing an activator for use with said adhesive, said container including means for dispensing said activator onto one or more of said workpieces, said piston and said capped container having a combined axial length greater than said syringe, said capped container telescoped within said syringe and mating with and capable of moving said piston when an axially directed force is applied to the exposed end of said container to eject said adhesive material from said delivery end of said syringe onto a workpiece in a position that will be in juxtaposition to said activator on it or another workpiece to be joined thereto.

4,543,149

STRIP SUPPLYING APPARATUS

Norio Abe, Higashimurayama, and Yoshiaki Kawahara, Kodaira, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 10, 1984, Ser. No. 659,549
Claims priority, application Japan, Dec. 27, 1983, 58-248945
Int. Cl.⁴ B65H *19/08*
U.S. Cl. 156—350 **8 Claims**

1. A strip supplying apparatus comprising in combination,

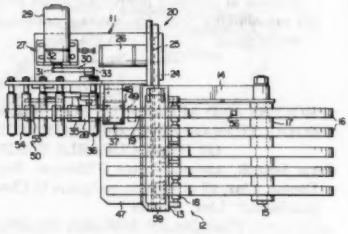
a stationary frame structure;

a movable frame structure movable with respect to said stationary frame structure along the side wall of said stationary frame structure and having a plurality of winding reels rotatable on said movable frame structure about an axis of rotation substantially in parallel with a direction in which said movable frame structure are moved with respect to said stationary frame structure, said winding reels being spaced in an equal pitch to each other;

drive means mounted on said stationary and movable frame structures for driving said movable frame structure to move with respect to said stationary frame structure by said pitch;

unwinding means mounted on said stationary frame structure for unwinding a strip unwound from each of said winding reels;

joining means mounted on said stationary frame structure for joining the trailing and leading end portions of said



strips unwound from two adjacent winding reels; said unwinding and joining means being held in line with one of said winding reels;

detecting means for detecting the trailing end portion of said strip unwound from said winding reel to produce a signal to drive said movable frame structure to move with respect to said stationary frame structure by said pitch; and

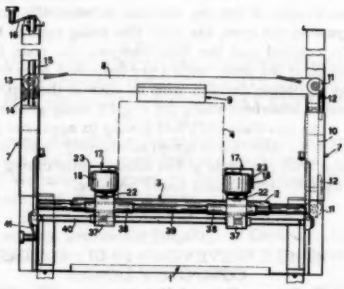
tension adjusting means mounted on said stationary frame structure at the downstream side of said unwinding means for adjusting tension of said strip fed from said unwinding means.

4,543,150

TAPING MACHINE WITH CONVEYING UNITS AT ADJUSTABLE DISTANCE

Augusto Marchetti, Piazza Sicilia, 7, 20146 Milano, Italy

Filed Feb. 21, 1984, Ser. No. 582,233
Claims priority, application Italy, Feb. 24, 1983, 19734 A/83
Int. Cl.⁴ B31B *1/00*
U.S. Cl. 156—468 **5 Claims**



1. An apparatus for conveying articles comprising a horizontal support base, a pair of vertical conveyor belts disposed in a transversely displaceable manner at two sides of the support surface to engage sidewalls of the articles, the conveyor belts having a drive means comprising a drive shaft disposed transversally to the support base at the discharge end of the conveyor belts, the drive shaft having a polygonal cross-section supporting a pair of transmissions, one for each conveyor belt, the transmissions comprising a first conical gear slideably

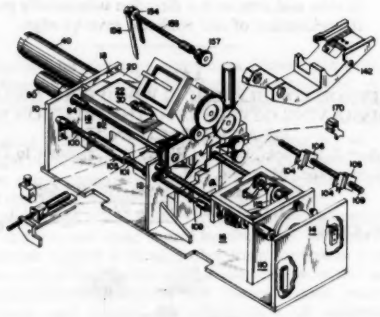
arranged on the drive shaft, a second conical gear meshing with and positioned perpendicular to the first conical gears, the second conical gear having a vertical shaft with a drive roller to receive and drive the conveyor belts, the apparatus further comprising a means to transversely displace the conveyor belts according to the size of the article being conveyed comprising a threaded shaft and a guide bar disposed transversally to the support base at the inlet end of the conveyor belts, a pair of support members supporting a vertical shaft and an idle roller to receive the conveyor belts, the support members being slideably mounted on the guide bar, the support members further having a threaded nut engaged with the threaded shaft, the threaded shaft having two portions with opposite threads each receiving one of the threaded nuts whereby rotation of the threaded shaft transversally displaces the conveyor belts with respect to each other.

4,543,151

DAYLIGHT APPARATUS FOR BREAKING OPEN A FILM CASSETTE, IDENTIFYING THE FILM RELEASED THEREFROM, AND SPLICING SAME TO THE NEXT PRECEDING FILM

Bruce D. Aldo, Granville, Mass., assignor to CX Corporation, Seattle, Wash.

Filed Jul. 18, 1983, Ser. No. 514,582
Int. Cl.[4] G03D *15/04, 17/00*
U.S. Cl. 156—502 **13 Claims**



12. In apparatus for preparing exposed film for subsequent processing and including a cassette opening system for opening a cassette containing a film rolled on a spool and having a removable end cap and a manipulating system for transferring the film into and moving along a lengthwise path of movement for trimming and identifying and splicing of the film, the combination of:

clamp means for movement into a cassette-holding position only and jaw means pivotable into an end cap prying position during the opening mode,

an axially-reciprocating pusher-puller means for pushing the spool and film outwardly of the cassette and into position for assuming the movement along the lengthwise path,

film rotating means for rotating the film and spool,

pinch roll means for embracing the rotating film and ensuring against uncoiling,

finding means for finding the film tonque,

roll couple means for receiving the film tongue and drawing the film away from the spool,

spool ejecting means for ejecting the emptied spool,

trimming means for trimming the lead end of the film preparatory to the splicing thereof to the tail end of the next preceding film,

means for printing film identifying indicia on a leading tab end of a splicing tape,

means for moving the tab end of the splicing tape into splicing position between the adjacent trailing end of a next preceding film and the leading end of the next succeeding film

means for severing the tab end from the splicing tape,

means for sealing the tab on the adjacent film ends, and

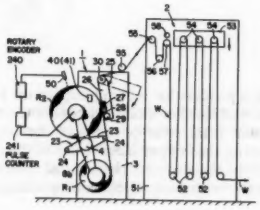
means for cyclically driving the cassette opening and film manipulating mechanisms.

4,543,152

APPARATUS FOR SPLICING SUCCESSIVE WEB ROLLS TO FEED A WEB INTO A ROTARY PRESS OR THE LIKE

Yoshiki Nozaka, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Aug. 4, 1983, Ser. No. 520,317
Claims priority, application Japan, Aug. 9, 1982, 57-138135
Int. Cl.[4] B31F *5/00*
U.S. Cl. 156—502 **16 Claims**



1. Apparatus for splicing successive web rolls to feed a continuous web of paper or like material into a web consuming or processing machine comprising:

(a) an infeed mechanism comprising:

(1) a pair of roll holder arms extending in parallel spaced relation to each other and medially pivoted for joint rotation, the roll holder arms rotatably carrying on their opposite ends an old web roll from which the web is delivered into the web consuming or processing machine and a new web roll to be spliced to the web from the old web roll;

(2) first drive means for controllably revolving the roll holder arms, the roll holder arms being held in a first preassigned angular position during the web delivery from the old web roll and, toward the end of the web delivery from the old web roll, being revolved by the first drive means to a second preassigned angular position where the web from the old web roll travels close to the periphery of the new web roll;

(3) second drive means for controllably revolving each of the old and new web rolls relative to the roll holder arms;

(4) electronic sensor means coacting with the second drive means for bringing an adhesive region on the leading web end of the new web roll to a preassigned angular position opposite to the web traveling from the old web roll past the new web roll when the roll holder arms are in the second preassigned angular position; and

(5) brake means for controlling the rotation of each of the old and new web rolls relative to the roll holder arms, the brake means arresting the rotation of the old web roll after the adhesive region on the new web roll comes to the preassigned angular position opposite to the web from the old web roll;

(b) a splicer mechanism located near the new web roll normally held in a retracted position away from the roll holder arms and, when the roll holder arms are revolved from the first to the second preassigned angular position, moved to a working position for pressing the web from the old web roll against the adhesive region on the new web roll while said new web roll is held in the second preassigned angular position; and

(c) a web storage mechanism interposed between the infeed mechanism and the web consuming or processing machine for normally storing therein a prescribed length of the web

from the old web roll, the stored length of the web being fed into the web consuming or processing machine during the splicing of the old and new web rolls.

4,543,153

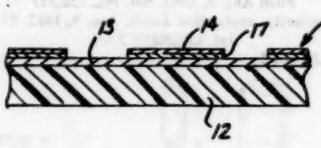
PROCESS AND APPARATUS FOR ETCHING COPPER MASKED BY A NICKEL-GOLD MASK

Norvell J. Nelson, Palo Alto, Calif., assignor to PSI Star, Hayward, Calif.

Filed May 17, 1984, Ser. No. 611,190

Int. Cl.[4] **C23F** *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—656 **12 Claims**



1. In a process for etching copper on a circuit board in the presence of another electrical conductor, the steps of: forming a metallic mask over portions of the copper to be retained, connecting the copper electrically to the other conductor, and contacting the exposed portions of the copper and the other conductor with a liquid etchant to effect removal of the copper.

4,543,154

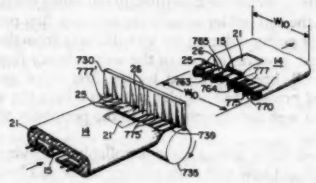
METHOD FOR SEVERING A LAMINATED WEB CONTAINING A DIMENSIONALLY HEAT UNSTABLE LAYER TO PRODUCE NON-LINEAR SHIRRED EDGES

Godfrey Reiter, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 4, 1983, Ser. No. 549,345

Int. Cl.[4] **A41B** *13/02;* **A61F** *13/16;* **B32B** *31/10, 31/18*

U.S. Cl. 156—73.1 **25 Claims**



1. A continuous method for elasticizing substantially inelastic articles by securing elastically contractible segments to a moving, interconnected web of said articles, said elastically contractible segments causing the severed edges of the discrete articles cut from said web along a line of severance coinciding with each of said elastically contractible segments to shirr in a direction substantially parallel to the orientation of said line of severance, said method comprising the steps of:

(a) subjecting a web of elastomeric material capable of exhibiting dimensionally heat stable and dimensionally heat unstable states to stretching while said web is at an elevated temperature which is less than its crystalline melting temperature;

(b) allowing said elastomeric web to cool to ambient temperature while in a stretched condition to establish a heat unstable state in the material comprising said web;

(c) feeding said web of elastomeric heat unstable material in a direction substantially parallel to said moving web of interconnected articles;

(d) severing discrete segments of said elastomeric heat unstable material from said elastomeric web in a direction substantially perpendicular to the direction of web travel, whereby each of said discrete segments of elastomeric material has its length oriented perpendicular to the direction of web travel and its width oriented in a direction substantially parallel to the direction of web travel;

(e) transferring said discrete, severed segments of elastomeric material in a substantially untensioned condition to said moving web of interconnected articles at isolated, predetermined locations along the length of said web;

(f) securing said discrete segments of substantially untensioned, heat unstable elastomeric material to said web of interconnected articles at predetermined spaced locations along the length of said segments;

(g) severing each of the interconnected articles from one another at predetermined points coinciding with said elastically contractible segments along a nonlinear line of severance, thereby dividing each of said elastically contractible segments into at least two portions and forming a multiplicity of discrete articles each having at least one portion of said segment of substantially untensioned elastomeric material in a heat unstable condition fused to said article along at least a portion of said nonlinear severed edge; and

(h) heating said discrete articles to an elevated temperature which is less than the crystalline melting temperature of said heat unstable segments of substantially untensioned elastomeric material, thereby causing said elastomeric material to contract along the fused portions of said nonlinear severed edge, to become heat stable and elastic, and to shirr said articles in a direction substantially parallel to the orientation of said nonlinear severed edge.

4,543,155

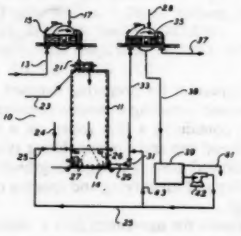
METHOD FOR BLEACHING WOOD PULP INCLUDING DISSOLVING OXYGEN INTO THE DILUTION WATER OF AN EXTRACTION STAGE

Robert J. Stawicki, Basking Ridge, N.J., assignor to The BOC Group, Inc., Montvale, N.J.

Filed Jan. 31, 1983, Ser. No. 462,645

Int. Cl.[4] **D21C** *9/06, 9/10, 9/14*

U.S. Cl. 162—57 **9 Claims**



1. A method for bleaching wood pulp wherein said pulp is passed as a slurry downwardly through an extraction stage in the form of a tower the top of which is exposed to ambient conditions and which has a dilution zone in the lower portion thereof comprising the steps of adding alkali to said stage; maintaining the temperature of pulp in said stage between approximately 40°–80° C., introducing dilution water into said dilution zone and introducing oxygen into said dilution water to thereby at least partially dissolve said oxygen in said water with the oxygenated dilution water being introduced into said stage generally cocurrently with the flow of said pulp therethrough, and retaining said pulp slurry in said dilution zone for an average residence time of less than approximately 5.0 minutes prior to removal from said tower, wherein the oxygen is introduced in an amount effective to increase the viscosity of the bleached pulp.

4,543,156
METHOD FOR MANUFACTURE OF A NON-WOVEN FIBROUS WEB

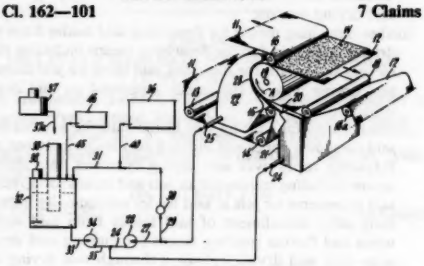
James O. Cheshire, Neenah; Douglas L. Lindgren, Appleton; Robert J. Marinack, Oshkosh; Bruce W. Janda, Neenah; Robert S. Thut, Green Bay; John T. Larkey, Green Bay, and Ray E. Jostad, Green Bay, all of Wis., assignors to James River-Norwalk, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 380,026, May 19, 1982, Pat. No. 4,443,299, which is a continuation of Ser. No. 179,229, Aug. 18, 1980, abandoned. This application Jan. 26, 1984, Ser. No. 574,287

The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.[4] D21D *3/00*

U.S. Cl. 162—101 7 Claims



1. A method for making a non-woven fibrous web from a foamed fiber furnish wherein said furnish is distributed on a moving foraminous support from a pressurized headbox which comprises:

a. forming a foamed fiber furnish containing 0.3 to 1.2 weight percent fibers by dispersing fibers in foamed liquid from step d comprising water and a surface active agent and containing 55 to 75 percent air by volume;

b. supplying said foamed fiber furnish from step a comprising said foamed liquid to said headbox and onto said foraminous support without further foam generation treatment with the production of a non-woven fibrous web and simultaneous regeneration of foamed liquid passing through said support by entrainment of additional amounts of air therein;

c. collecting said regenerated foamed liquid after passing through said support, said regenerated foamed liquid containing from about 55 to about 75 percent air by volume; and

d. returning collected foamed liquid from step c directly to step a as the source of foamed liquid for the preparation of said foamed fiber furnish.

4,543,157
METHOD AND APPARATUS FOR THE MANUFACTURE OF VARIEGATED PAPER WEBS

Harold R. Jones, Groton, and Karl F. Salla, Lunenburg, both of Mass., assignors to James River Pepperell, Inc., East Pepperell, Mass.

Filed Nov. 14, 1983, Ser. No. 551,334

Int. Cl.[4] D21H *5/02*

U.S. Cl. 162—134 15 Claims

1. The process of making controllably randomized variegated paper which comprises

(a) continuously forming a moving paper web from a fiber furnish,

(b) wet pressing the web to a moisture content of from about 40% to about 60%,

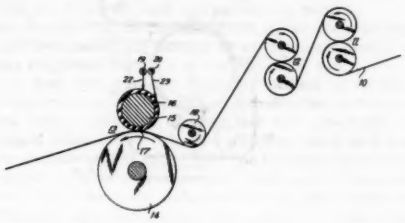
(c) directing the pressed web through a roller nip including a transfer roller,

(d) continuously applying to said transfer roller at a point remote from said nip a plurality of showers of dye solution,

(e) said dye showers being spaced across the width of said web,

(f) said dye showers being initially distributed on the surface of said transfer roller, then transferred to said wet web,

(g) said dye showers comprising first and second arrays of showers, each such array discharging a separate dye solution,



(h) continuously transversely oscillating said arrays of showers with respect to said web, each such array being oscillated on a pattern different from the other,

(i) continuously roller pressing said dye solutions, as applied to said transfer roller by said arrays of showers, into said wet web,

(j) said dye being diffused through the web as a partial function of the moisture content of said web, and

(k) thereafter drying said web.

4,543,158
SHEET TYPE FELT

Alfredo A. Bondoc, South Bound Brook; Eugene J. Flood, Haddonfield, and Frederick W. Sieling, Bound Brook, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Apr. 2, 1984, Ser. No. 595,881

Int. Cl.[4] D21H *5/18*

U.S. Cl. 162—145 12 Claims

1. Sheet type felt between about 0.4 and about 4 millimeters thick comprising on a dry basis:

(a) between about 40 and about 80 wt % cellulosic fibers;

(b) between about 5 and about 20 wt % glass fibers;

(c) between about 5 and about 15 wt % non-asphaltic binder; and

(d) between about 3 and about 20 wt % asphalt.

4,543,159
REINFORCED CEMENT SHEET PRODUCT CONTAINING NO ASBESTOS FOR FABRICATING ON HATSCHEK MACHINE

Robert M. Johnson, and Elmer M. Melling, both of Kenmore, N.Y., assignors to National Gypsum Company, Dallas, Tex.

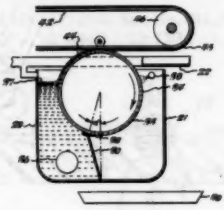
Division of Ser. No. 401,870, Jul. 26, 1982, abandoned, which is a division of Ser. No. 233,663, Feb. 11, 1981, Pat. No. 4,428,775. This application Feb. 9, 1984, Ser. No. 578,557

Int. Cl.[4] D21H *3/60*

U.S. Cl. 162—164.1 21 Claims

1. A process for making a cement and non-asbestos fiber mat on a Hatschek machine having a cylinder vat, a cylinder in said cylinder vat, and a porous surface on said cylinder on which said mat is formed and through which drainage water passes comprising the steps of introducing a slurry of cement and non-asbestos fibers and clay and poly(ethylene oxide) and water into said cylinder vat, and maintaining a lesser portion of said porous surface in engagement with said cement and non-asbestos slurry than the portion of said surface which is otherwise normally engaged by a cement and asbestos slurry of the same depth which is at substantially the same level on both

sides of said cylinder to form said cement and non-asbestos fiber mat on said lesser portion of said porous surface and to cause said drainage water to pass through said lesser portion of said porous surface to thereby provide less area for the cement and non-asbestos slurry to drain than the area through which a cement and asbestos slurry of the same depth drains, said cement being present in an amount of at least 40% of the total dry weight of said fiber mat and said fibers being present in an



amount of at least 1% of the total dry weight of said fiber mat, and said poly(ethylene oxide) being present in an amount of at least 0.03% of the total dry weight of said fiber mat and said clay being present in an amount of at least 2% of the total dry weight of said fiber mat, said poly(ethylene oxide) and clay causing cement fines to be retained in said fiber mat formed from said cement and non-asbestos slurry to cause said drainage water to be substantially clear and not have any appreciable amount of cement fines so that it may be recirculated.

4,543,160

METHOD AND DEVICE FOR GUIDING THE LEADER OF THE WEB IN THE DRYING SECTION OF A PAPER MACHINE

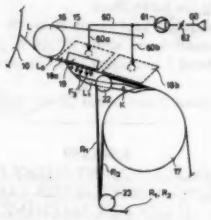
Reima Kerttula, Jyväskylä, and Pekka Eskelinen, Turku, both of Finland, assignors to Valmet Oy, Finland

Filed Sep. 24, 1984, Ser. No. 653,825

Claims priority, application Finland, Oct. 3, 1983, 833590

Int. Cl.[4] D21F *7/00, 1/36, 2/00*

U.S. Cl. 162—193 **17 Claims**



1. A method for guiding a leader of a web in a drying section of a paper machine, said paper machine having threading ropes with a gap therebetween drying cylinders and a drying wire in said drying section and a press section with a roller, said method including cutting a narrow leader out of a full-width web, guiding the leader by air jets into the gap between the threading ropes and carrying said leader between the threading ropes over the drying cylinders, said method comprising the sequential steps of

detaching said leader from the roller of said press section by first air jets;

guiding the detached leader by second air jets into connection with the drying wire of said drying section;

directing third air jets through said drying wire to the leader supported on said drying wire thereby detaching said leader from said drying wire;

directing transverse air jets at said leader substantially immediately after detachment of said leader from said drying wire thereby shifting said leader into the gap between said threading ropes and moving said leader between said threading ropes over said drying cylinder,

and guiding said drying wire over said drying clinders through said drying section.

7. In a paper making machine, a device for guiding a leader of a web in a drying secion of the paper machine said paper mahine having threading ropes with a gap therebetween, drying cylinders and a drying wire in said drying section and a press section with a roller, said device comprising

detaching means including first air jets for detaching said leader from the roller of said press section;

guiding means including second air jets for guiding the detached leader into connection with the drying wire of said drying section;

further detaching means for detaching said leader from said drying wire, said further detaching means including third air jets and means for directing said third air jets through said drying wire to the leader supported on said drying wire;

shifting means for shifting said leader into the gap between said threading ropes and moving said leader between said threading ropes over said drying cylinders, said shifting means including transverse air jets and means for directing said transverse air jets at said leader substantially immediately after detachment of said leader from said drying wires and further guiding means for guiding said drying wire over said drying cylinders through said drying section.

4,543,161

DOUBLE CYLINDER PRESS FOR FORMATION OF FIBROUS LAYERS

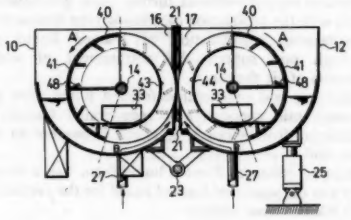
Shigeo Fujimoto, 3984-24, Imaizumi, Fuji-shi, Shizuoka-ken, Japan

Filed Aug. 8, 1984, Ser. No. 638,714

Claims priority, application Japan, Aug. 9, 1983, 58-122838; May 17, 1984, 59-71094

Int. Cl.[4] D21F *1/60;* **B30B** *9/20;* **D21D** *5/06*

U.S. Cl. 162—323 **15 Claims**



1. In a double cylinder press for the formation of fibrous layers, comprising a stationary butt and a swing butt which are disposed side by side with the opposed sides thereof opened entirely to communicate with each other and which are provided therein one each with cage cylinders covered at the outer circumferences thereof with wire gauzes and rotatably supported within said stationary butt and said swing butt by means of shafts, said swing butt being capable of being longitudinally swung relative to said stationary butt with a pivot portion formed on the lower portion of the opposed opened sides of said stationary butt and said swing butt as a fulcrum, the edges of said opposed opened sides excluding the uppermost edges of said stationary butt and said swing butt being stretchably joined with each other by means of a flexible member, the improvement wherein:

each of said stationary butt and said swing butt has its lower portion curved along the arc shape of said cage cylinders, said cage cylinders have their respective opposite end por-

tions formed to have a diameter smaller than that of the portions thereof covered with said wire gauzes to define between the adjacent end portions of said cage cylinders compartments for collecting therein masses of fibers formed on the surfaces of said wire gauzes due to a peeling phenomenon, and are provided on the inner circumferences thereof with a plurality of inclined drain plates which are extended in the lengthwise direction of said cage cylinders and disposed at regular intervals, and

part of said flexible member joining the side edges of said opposed opened sides of said stationary butt and said swing butt assume a U-shape and other part thereof joining the lower edges of said opposed opened sides assume an inverted U-shape.

4,543,162

MULTI-PLY HEADBOX HAVING ADJUSTABLE OUTLET SLICES

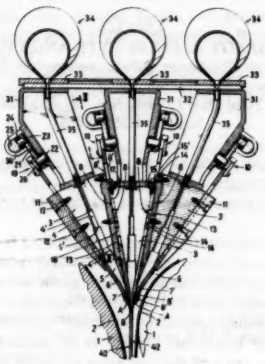
Otto Hildebrand, Taldorf, Fed. Rep. of Germany, assignor to Escher Wyss Limited, Ravensburg, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,397

Claims priority, application Switzerland, Jul. 20, 1982, 4416/82

Int. Cl.⁴ D21F *1/02*

U.S. Cl. 162—343 **19 Claims**



1. A multi-ply headbox for a papermaking machine comprising:

at least two headbox elements arranged adjacent one another;

each of said at least two headbox elements comprising an infeed member containing distributor channels including turbulence elements for the throughflow of a fiber stock suspension in a predetermined direction of flow;

each of said at least two infeed members being arranged adjacent one another and having substantially wedge-shaped converging side walls;

a predetermined one of said substantially wedge-shaped converging side walls of one of said at least two adjacently arranged infeed members confronting a predetermined one of the other of said at least two adjacently arranged infeed members to define a confronting pair of side walls;

each said headbox element being provided with a nozzle chamber flow communicating with said infeed member thereof;

said nozzle chambers being bounded by outer lip members and at least one relatively rigid intermediate lip member located between said confronting pair of side walls of said two adjacently arranged infeed members and between said nozzle chambers and forming outlet slices;

said at least one relatively rigid intermediate lip member having a lengthwise direction of extent;

said at least one relatively rigid intermediate lip member, which is arranged between said confronting pair of side walls of said at least two adjacently arranged infeed members, being displaceable between said two adjacently arranged infeed members between said confronting pair of side walls in said lengthwise direction of extent of said at least one relatively rigid intermediate lip member for adjusting the size of the outlet slice bounded by said at least one relatively rigid intermediate lip member;

means for adjusting the position of said at least one relatively rigid intermediate lip member by displacement thereof in said lengthwise direction of extent thereof; and

said at least one relatively rigid intermediate lip member being structured to cooperate with an adjacent lip member and being displacable between said two adjacently arranged infeed members by said adjusting means such that the displacement of said at least one relatively rigid intermediate lip member is substantially exclusively effective at only one of the outlet slides bounded by said at least one relatively rigid intermediate lip member for altering the size of said one outlet slice without affecting the size of any other ones of said outlet slices.

4,543,163

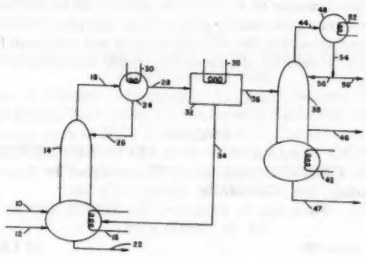
PROCESS FOR RECOVERY OF AMINE FROM SPENT ACID STRIPPING LIQUOR

David M. Stamerjohn; Richard V. Norton, both of Columbus, and Gregory P. Sturtz, Worthington, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 409,905, Aug. 20, 1982, Pat. No. 4,472,246. This application Jul. 6, 1984, Ser. No. 609,225

Int. Cl.⁴ B01D *3/34*

U.S. Cl. 203—37 **8 Claims**



1. A process for recovering a virtually water-free product-grade amine from an amine acid salt thereof contained in a spent acid stripping liquor, said amine azeotroping with water, which comprises:

(a) passing said amine acid salt-containing spent acid stripping liquor and a base into a distillation pot filled with an overhead first distillation column, the proportion of base being adequate to liberate essentially all of said amine from its acid salt, said distillation pot being held at a temperature and pressure sufficient for said amine to be volatilized from said pot and into said overhead first distillation column, said first distillation column containing an adequate number of theoretical stages and being maintained under conditions so that the overhead distillate withdrawn therefrom is lower in water content than the content of said distillation pot;

(b) withdrawing said distillate from said first distillation column and at least partially condensing same;

(c) passing said at least partially condensed distillate into a separation zone which is mildly heated and withdrawing therefrom a lower aqueous phase depleted in amine and an upper amine-rich phase;

(d) passing said amine-rich phase into a second distillation column at a point intermediate between an upper distillate outler and a lower tenate outlet, said second distillation column being maintained under conditions adequate so that a virtually water-free amine product is formed;

(e) withdrawing from said second column said product-grade amine which is virtually water free.

5. A process for recovering a virtually water-free product-grade amine from an acid salt thereof which comprises:

(a) mixing a base with said amine acid salt-containing spent acid stripping liquor in a mixing zone containing aqueous solvent in a proportion of base adequate to liberate essentially all of said amine from its acid salt;

(b) mildly heating said aqueous mixture in a separation zone and permitting said mixture to separate into a lower aqueous phase and an upper amine-rich phase;

(c) withdrawing said amine-rich phase from said separation zone and passing same into a distillation column at a point intermediate between an upper distillate outlet and a lower tenate outlet, said distillation column containing an adequate number of stages and being held under conditions such that a virtually water-free product-grade amine is withdrawn from said column.

4,543,164

SEPARATION OF METHYL ACETATE FROM METHANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., and An-I Yeh, 709 S. 12th Ave., both of Bozeman, Mont. 59715

Filed Apr. 14, 1983, Ser. No. 485,006
Int. Cl.[4] B01D *3/40*; C07C *67/48*
U.S. Cl. 203—56 **3 Claims**

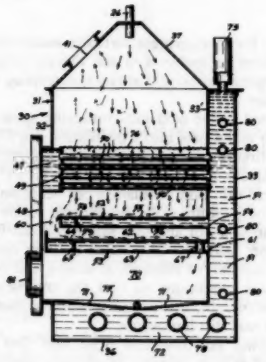
1. A method for recovering methyl acetate from a mixture of methyl acetate and methanol which comprises distilling a mixture of methyl acetate and methanol in a rectification column in the presence of an effective amount of an extractive agent, recovering essentially pure methyl acetate as overhead product and obtaining the extractive agent and methanol from the stillpot or reboiler, the extractive agent comprises at least glycerine.

4,543,165

PRODUCT SEPARATION AND RECOVERY SYSTEM

Joseph A. Capella, Crystal River, Fla., assignor to Recovery Technology, Inc., Gainesville, Fla.

Filed Aug. 1, 1983, Ser. No. 518,891
Int. Cl.[4] B01D *3/04*
U.S. Cl. 203—89 **11 Claims**



11. A method for separating water and solvents from a mixture containing water and solvents comprising the steps of:

(a) filtering the mixture through a mechanical filter;

(b) preheating the filtered mixture;

(c) introducing the mixture into a distillation zone;

(d) interrupting the flow of the mixture to reduce its velocity to cause such mixture to drip as it flows by gravity through the distillation zone;

(e) contacting said mixture with a tubular heat exchanger to vaporize a portion of the water and solvent from said mixture;

(f) collecting the mixture passing by gravity from the tubular heat exchanger on a series of flat plate heat exchangers where such mixture is caused to flow as a thin film thereby further vaporizing the water and solvent from said mixture to form a resultant mixture;

(g) collecting the resultant mixture passing from the flat plate heat exchanger on a heated collection plate where on such resultant mixture is pooled while being exposed to heat thereby vaporizing any remaining water and solvent from said resultant mixture to leave a pure residual product;

(h) collecting the vapor from within the distilling zone and condensing the vapor therefrom to form water and solvent products and thereafter storing said solvent products; and

(i) collecting the residual product from said collecting plate.

4,543,166

ZINC-ALLOY ELECTROLYTE AND PROCESS

Ronald J. Lash, Rochester, Mich., assignor to OMI International Corporation, Warren, Mich.

Filed Oct. 1, 1984, Ser. No. 655,838
Int. Cl.[4] C25D *3/56*
U.S. Cl. 204—44.2 **20 Claims**

1. An aqueous acidic electrolyte for electrodepositing a zinc alloy on a substrate comprising:

(a) zinc ions present in an amount sufficient to electrodeposit zinc,

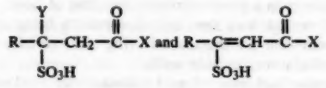
(b) at least one additional metal ion selected from the group consisting of nickel, cobalt and mixtures thereof present in an amount sufficient to electrodeposit an alloy of zinc-nickel, zinc-cobalt and zinc-nickel-cobalt,

(c) a brightening amount of a primary brightener,

(d) a carrier brightener present in an amount effective to refine the grain of the zinc alloy electrodeposit,

(e) an auxiliary brightener present in an amount effective to impart supplemental brightness to the zinc alloy electrodeposit,

(f) a ductilizer present in an amount effective to impart ductility to the zinc alloy electrodeposit comprising a compound as well as the bath soluble and compatible salts thereof corresponding to the structural formula:



wherein:

R is H or C_6–C_{10} aryl, or C_6–C_{20} alkyl aryl in which the alkyl group is C_1–C_4; or C_1–C_{22} alkyl, or C_2–C_{10} heterocyclic nitrogen compounds having at least one tertiary or quaternary ring containing nitrogen; as well as the mono, di or tri substituted derivatives thereof including —OH, —SO_3H or —COOH; the Group I and II metals and NH_4 salts thereof; and the aldehyde, ketone and ether derivatives thereof; X is R or —OR′ or —NR_2′ in which R′ is H or a C_1–C_4 aliphatic radical; and

Y is H or SO_3H;

as well as the compatible water soluble salts thereof.

4,543,167
CONTROL OF ANODE GAS EVOLUTION IN TRIVALENT CHROMIUM PLATING BATH

Edgar J. Seyb, Jr., Freehold, and Laurence A. Brown, Carteret, both of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Continuation of Ser. No. 354,999, Mar. 5, 1982, abandoned. This application Feb. 3, 1984, Ser. No. 576,778

Int. Cl.⁴ C25D *3/06*

U.S. Cl. 204—51 **6 Claims**

1. An improved method for electroplating a high quality chromium deposit from a bath including a trivalent chromium salt and chloride ions which suppresses the production of chlorine gas at the anode and prevents the formation of hexavalent chromium ion even during an extended period of plating, comprising:

(a) including said bath a suppressor mixture of

(i) an ammonium ion; and

(ii) 0.004 to 0.008 mole per liter of bromide ion,

(b) carrying out said plating to provide said high quality chromium deposit continuously during said extended period of plating without replenishing the bromide ion content.

4,543,168
PROCESS FOR THE PREPARATION OF KETONES CORRESPONDING TO 1,4-3,6-DIANHYDROHEXITOLS BY ANODIC ELECTROOXIDATION

Guy Fleche, Merville; Antoine Gaset, and Jacquet Fabienne, both of Toulouse, all of France, assignors to Roquette Freres, Lestrem, France

Filed May 2, 1984, Ser. No. 606,233

Claims priority, application France, May 4, 1983, 83 07458

Int. Cl.⁴ C25B *3/02*

U.S. Cl. 204—78 **12 Claims**

1. Process for the preparation of ketone derivatives of isomannide and of isosorbide which comprises subjecting to anodic electrooxidation an aqueous isomannide or isosorbide solution containing an electrolyte.

4,543,169
GOLD RECOVERY PROCESS

Vincent F. D'Agostino, Huntington; Joseph Y. Lee, Lake Grove; Stephen Zapisek, Huntington Station, and George Schore, Great Neck, all of N.Y., assignors to RAI Research Corporation, Hauppauge, N.Y.

Filed Aug. 31, 1983, Ser. No. 527,967

Int. Cl.⁴ C25C *1/00, 1/20, 1/12, 1/16*

U.S. Cl. 204—105 R **16 Claims**

1. A method of metal recovery comprising;

(a) forming a weakly-basic anion-exchange material by radiation-grafting monomers comprising pyridinyl functional groups to a polymeric felt substrate to the extent of 10–1500%; and

(b) contacting the anion-exchange material with an acidic aqueous solution comprising metal-cyanide anions so as to form a complex between the anions and the pyridinyl groups, thereby removing the anions from solution.

4,543,170
METHOD OF PRODUCING ACCURATELY SCALED, WELL-DEFINED SURFACES OF WORK PIECES FROM CARBONACEOUS CAST IRON WITH TRIBOLOGIC PROPERTIES

Klaus Heck, and Horst Lindner, both of Ingolstadt, Fed. Rep. of Germany, assignors to Audi AG, Ingolstadt, Fed. Rep. of Germany

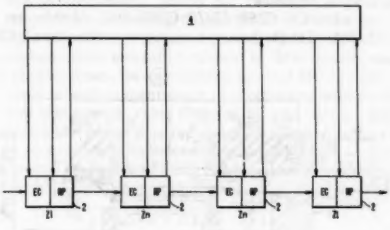
Filed Apr. 29, 1983, Ser. No. 490,184

Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217818

Int. Cl.⁴ B23P *1/00, 1/20*

U.S. Cl. 204—129.2 **4 Claims**

1. Method of producing accurately scaled, well-defined surfaces of workpieces made from carbonaceous cast iron and having tribologic properties, comprising subjecting said surfaces to at least two operating cycles, starting with a first cycle and concluding with a last cycle, each cycle including an electrochemical and a subsequent mechanical removal in order to create surfaces with a proportion of metallically bearing plateaus which are partially clad with graphite and mixed



crystals and with open areas covered with graphite flakes and having a modest micro roughness, carrying out at least the last operating cycle in a specified ratio between electrochemical and mechanical removal to produce in the last operating cycle a metallically bearing plateau proportion of 40% to 65% of the surface.

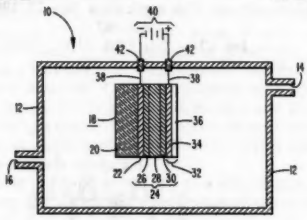
4,543,171
METHOD FOR ELIMINATING DEFECTS IN A PHOTODETECTOR

Arthur H. Firester, Montgomery Township, Somerset County, and Robert V. D'Aiello, East Brunswick Township, Middlesex County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 22, 1984, Ser. No. 592,396

Int. Cl.⁴ C25F *3/12;* **H01L** *21/308*

U.S. Cl. 204—129.3 **10 Claims**



1. A method for improving the performance of a photodetector having an electrical defect therein and comprising a pair of electrodes on a semiconductor body, said method comprising the step of

immersing said photodetector in a chemical ambient having an etching rate for an exposed surface of at least one of said electrodes which increases with increasing temperature while applying a reverse-bias voltage of sufficient magnitude to said electrodes to cause a local increase in the temperature of said exposed surface at said defect for a sufficient period of time to remove a portion of said exposed electrode at said defect.

4,543,172
HIGH SPEED PLATING APPARATUS

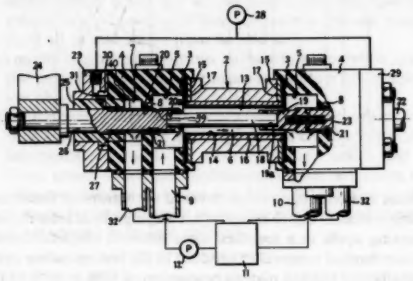
Toshiyuki Suzuki, 4981-119 Uchino, Hamakita-shi, Shizuoka-ken, and Hiroshi Tsukakoshi, 161-216 Tohshin-cho, Iwata-shi, Shizuoka-ken, both of Japan

Filed Mar. 3, 1982, Ser. No. 354,179

Claims priority, application Japan, Mar. 3, 1981, 56-30083; Mar. 3, 1981, 56-30084

Int. Cl.⁴ C25D *17/12*; C25B *9/00, 11/04*

U.S. Cl. 204—224 R **7 Claims**



1. In a high speed plating apparatus having a plating chamber equipped with electrodes the improvement comprising:

one of said electrodes being cylindrical to form a cylindrical plating chamber;

a metal tube fitted into said cylindrical electrode between the inner surface of said cylindrical electrode and said plating chamber formed thereby;

said metal tube being comprised of an alloy of platinum having a higher melting point than said electrode and being corrosion resistant to a plating liquid whereby said metal tube covers and protects the inner circumferential surface of said one electrode.

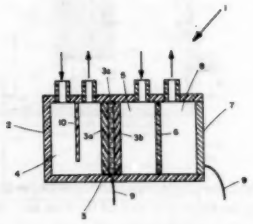
4,543,173
SELECTIVE ELECTROCHEMICAL OXIDATION OF ORGANIC COMPOUNDS

Stephen A. Noding, Brusly, La., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 493,878, May 12, 1983, Pat. No. 4,464,236, which is a continuation-in-part of Ser. No. 376,805, May 10, 1982, abandoned. This application Jun. 27, 1984, Ser. No. 625,287

Int. Cl.⁴ C25B *9/00, 11/03, 11/06*

U.S. Cl. 204—263 **3 Claims**



1. An electrochemical cell for oxidizing an aryl-compound to a quinoid compound comprising a cell body forming a compartment to hold an aqueous electrolyte solution; an anodic electrode including a first foraminous or porous layer of a hydrophobic material, a second foraminous or porous layer with an oxidation catalyst dispersed therein, and a current collector in electrical contact with the second layer, the second layer positioned to provide contact with the aqueous electrolyte solution; a cathodic electrode positioned to provide contact with the aqueous electrolyte; means for transporting the aryl-compound through the first layer to the second layer of the anodic electrode; means for maintaining a pressure differential between the aqueous electrolyte solution and the aryl-compound sufficiently low to prevent substantial bulk intermixing of the aryl-compound and the aqueous electrolyte solution or flow of either the electrolyte solution or the aryl-compound through the anodic electrode whereby a substantially uniform interface of the aryl-compound and the aqueous electrolyte solution is formed at the boundary between the first and second layers or in the second layer of the anodic electrode; means for removing the quinoid compound from the cell; and means for supplying an electrical current between the cathodic and anodic electrodes.

4,543,174
METHOD OF MAKING A CATALYTIC LEAD-BASED OXYGEN EVOLVING ANODE

Henri B. Beer, Heide Kalmthout, Belgium; Michael Katz, Haifa, Israel, and Jean M. Hinden, Chambesy, Switzerland, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Continuation-in-part of Ser. No. 467,158, Feb. 16, 1983, abandoned. This application Jul. 6, 1984, Ser. No. 628,533

Int. Cl.⁴ C25B *11/00*; C25C *7/00*

U.S. Cl. 204—290 R **7 Claims**

1. A method of making a catalytic lead-based, oxygen evolving anode comprising catalytic titanium particles activated with a minor amount of a ruthenium-based electrocatalyst, which particles are uniformly distributed on and partly embedded in the surface of an anode base of lead or lead alloy, whereby they are electrically connected to said base and present a large exposed active surface projecting from said base for evolving oxygen at a reduced potential at which the underlying lead or lead alloy at the surface of the anode base remains electrochemically inactive, comprising the steps of:

(a) producing said catalytic titanium particles by impregnating titanium sponge particles having a size greater than 300 microns with an activating solution containing thermally decomposable manganese and ruthenium compounds in proportions corresponding to molar ratios of Mn/Ru of between about 7/3 and about 9/1, then drying and heat treating said particles to convert said compounds into oxides of ruthenium and manganese and repeating this impregnating, drying and heat treating sequence at least once to provide an effective concentration of ruthenium amounting to less than 6% by weight of the titanium sponge particles;

(b) applying to the surface of said anode base a uniform distribution of said catalytic titanium sponge particles in an amount corresponding to at least 400 grams of titanium sponge per square meter of said surface; and

(c) pressing said particles against said surface until they are partially embedded therein and firmly anchored to said anode base in good electrical contact therewith.

7. A catalytic anode obtained by the method of claim 1.

4,543,175
ION RESPONSIVE PROBE

William P. Subsara, Santa Ana, and Michael R. Levonius, Anaheim, both of Calif., assignors to Gam Rad, Inc., Garden Grove, Calif.

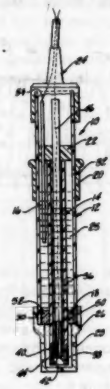
Filed Aug. 8, 1983, Ser. No. 521,178

Int. Cl.⁴ G01N *27/46, 27/28*

U.S. Cl. 204—400 **6 Claims**

2. An ion sensing probe for measuring the ionic characteristics of a liquid solution comprising: a tubular outer housing constructed of a chemically resistant plastic, an electrode located within said outer housing and extending partially beyond one end of said outer housing, said electrode including a tubular member constructed of a chemically resistant plastic, an annular band of platinum located on a first end of said

tubular member and secured thereto via an adhesive, a lead wire which is substantially of an electrically conductive material different from that of said band and extending into said tubular member to substantially the location of said band, means electrically connecting said lead wire to said band,



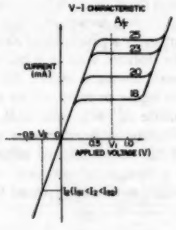
means for sealing said tubular member from the liquid solution at least in the area of said band, an annular porous junction sealingly located at said one end of said outer housing, said tubular member sealingly located in an opening in said porous junction with said band located beyond said one end of said outer housing.

4,543,176

OXYGEN CONCENTRATION DETECTOR UNDER TEMPERATURE CONTROL

Takashi Harada, Hekinan; Akio Kobayashi, Kariya; Masakazu Honda, Anjo; Susumu Harada, Okazaki; Masaya Fujimoto, Oobu, and Masatoshi Suzuki, Anjo, all of Japan, assignors to Nippondenxo Co., Ltd., Kariya, Japan

Filed Mar. 2, 1984, Ser. No. 585,861
Claims priority, application Japan, Mar. 8, 1983, 58-37788
Int. Cl.⁴ G01N *27/58*
U.S. Cl. 204—406 **10 Claims**



1. An oxygen concentration detector, for detecting the concentration of oxygen in a test gas

(a) a cup-shaped oxygen sensor made of solid-electrolyte material, the interior of the cup being exposed to a reference gas of a predetermined oxygen concentration through a first electrode, the exterior thereof being exposed to said test gas through a second electrode and a predetermined oxygen-diffusion resistant layer, the sensor being of the limited current type wherein for a predetermined positive bias voltage applied thereto a positve bias current flows therein which current is related to the concentration of oxygen in said test gas;

(b) means for heating said oxygen sensor,

(c) current detector means for detecting electric current flowing through said oxygen sensor,

(d) bias control means for applying a negative bias of a predetermined DC voltage to said oxygen sensor during a first predetermined period for causing a negative bias temperature measuring current to flow therein and, during a second predetermined period, a positive bias oxygen concentration measuring current to flow therein, and

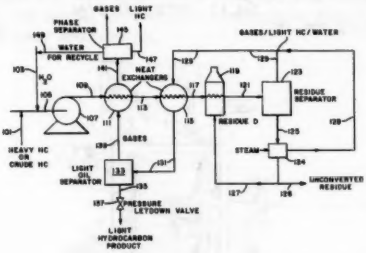
(e) control means for determining internal DC electric resistance of said oxygen sensor in accordance with the negative bias current value detected by said current detector means and controlling the operation of said heating means in accordance with said determined resistance so that said internal electric resistance value reaches a predetermined value.

4,543,177

PRODUCTION OF LIGHT HYDROCARBONS BY TREATMENT OF HEAVY HYDROCARBONS WITH WATER

Andiappan K. S. Murthy, Lake Hiawatha; Kundanbhai M. Patel, Landing, and Alex Y. Bekker, Teaneck, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 11, 1984, Ser. No. 619,663
Int. Cl.⁴ C10G *29/02, 35/02;* C07C *4/04*
U.S. Cl. 208—130 **23 Claims**



1. A process for converting heavy hydrocarbons into light hydrocarbons which comprises:

(a) contacting, in a first zone, heavy hydrocarbons having an API gravity at 25° C. of less than about 20 with a liquid comprising water, in the absence of externally added catalyst and hydrogen, at a temperature between about 400° C. and about 480° C. and at a pressure between about 690 kPa (about 100 psig, about 6.76 atm) and less than about 5,000 kPa (about 725 psig, about 49 atm), and for a contact time under continuous flow conditions sufficient to form a uniform mixture;

(b) forwarding the uniform mixture to a second zone while maintaining the temperature and pressure conditions of the first zone;

(c) maintaining the uniform mixture in the second zone at substantially steady state conditions under the temperature and pressure conditions of the first zone, in the absence of externally added catalyst and hydrogen, for a time sufficient to separate the uniform mixture into a residue and a phase comprising light hydrocarbons, gas and water;

(d) withdrawing the residue and said phase from the second zone;

(e) separating said phase into a gaseous product, a liquid comprising water and light hydrocarbon product having an API gravity at 25° C. of greater than about 20 and substantially free of vanadium and nickel values; and

(f) recovering said light hydrocarbon product.

4,543,178

DUAL INTENSITY MAGNETIC SEPARATION PROCESS FOR BENEFICIATION OF PLATINUM ORE

Theodore P. Goldstein, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 15, 1983, Ser. No. 514,128
Int. Cl.[4] B03C *1/30*; B07B *13/00*
U.S. Cl. 209—2 9 Claims

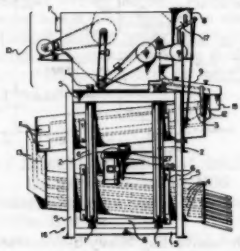
1. A process for recovering platinum and platinum group element ores from sediments comprising (1) screening the sediment until substantially all coarse material having a diameter larger than about 2 mm is removed; (2) magnetically separating and removing strongly magnetic minerals from the remaining sediment with a weak magnetic field having a force of from about 10 gauss to about 100 gauss; (3) removing the paramagnetic materials with a strong magnetic field having a force of from about 100 gauss to about 20 kilogauss; and (4) separating and recovering the platinum ores and/or platinum group element ores therefrom leaving a diamagnetic residue.

4,543,179

ROTARY GRAIN CLEANER

Norman Berglund, Thunder Bay, Canada, assignor to Thunder Bay Northland Machinery Inc., Ontario, Canada

Continuation of Ser. No. 413,688, Sep. 1, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,561
Claims priority, application Canada, Sep. 4, 1981, 385250
Int. Cl.[4] B07B *1/38, 1/46*
U.S. Cl. 209—30 4 Claims



1. An apparatus for sorting particles of different sizes comprising an aspirator unit for removing debris from among said particles, and a screen unit for receiving said particles from said aspirator unit and sorting said particles, said screen unit comprising:

(a) a rigid outer frame assembly;

(b) a rigid inner frame assembly suspended within said outer frame assembly by a plurality of rigid non-flexible vertical hanger rods, each said hanger rod being connected to an upper corner of said outer frame and a lower corner of said inner frame by a spherical seat bearing whereby said inner frame assembly can swing freely within said outer frame assembly;

(c) at least a pair of superposed, vertically spaced, inclined screen decks secured within said inner frame assembly the lower corner of said inner frame extending below the lowermost screen deck, each deck including at least one screen and one tray disposed beneath said screen and parallel thereto;

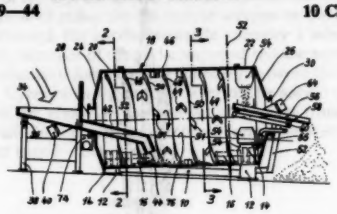
(d) rotating means mounted on said inner frame assembly in the space between said inclined screen decks, for rotating said inner frame within said outer frame, and agitating the particles on said screens.

4,543,180

DEVICE FOR SEPARATING COARSE AND FINE PARTICLES FROM ULTRAFINES

Rudolf Riker, Memmingen, Fed. Rep. of Germany, assignor to Stetter GmbH, Memmingen, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 613,819
Int. Cl.[4] B03B *7/00, 5/56*
U.S. Cl. 209—44 10 Claims



1. An improvement in a machine for separating coarse and fine particles as gravel and/or sand from a sludge containing ultrafine substances, as laitance, the machine comprising a rotatably mounted drum provided with a pair of axially opposite openings, one said opening forming a discharge opening for said coarse and fine particles and the other said opening forming a discharge opening for the sludge, means to flow said sludge towards said other opening, feeding means being provided for feeding a mass containing components to be separated, said feeding means extending through said other of said pair of openings into the drum, a water feeding pipe extending through said one of said pair of openings into the drum, a sludge water mixture within said drum, a helical web provided at the inside of a peripheral wall of the drum, and a plurality of buckets fastened at said peripheral wall between said one opening and the helical web, said helical web being constructed and arranged to move said coarse and fine particles towards said buckets each of the said buckets being provided with a bottom wall and a pair of side walls and draining means in said bottom wall, and a discharge chute extending through said other one of said pair of openings; the improvement comprising:

draining means provided in each one of said pair of side walls of each said bucket, the draining means of the bottom wall of the buckets comprising a plurality of longitudinal slots having a width in the range of 10 to 30 mm and extending substantially parallel with one another and with the drum axis; the slots running substantially over the whole axial width of the bottom wall, each slot being overlapped by a guide plate which in a horizontal position of the bottom wall of the bucket forms an inclined ramp the radial inward edge of which is spaced above the bottom wall, the draining means of each one of said pair of side walls comprising a plurality of slots extending downwardly with the bottom wall in a horizontal position and ending at a small distance above the bottom wall, said plurality of slots being overlapped by guide plates respectively at the inside of each side wall, the said side wall guide plates forming inclined ramps with respect to the side walls, and the radial inward edge of each side wall guide plate in a horizontal position of the bottom wall extending upwards and being spaced from the side wall.

4,543,181

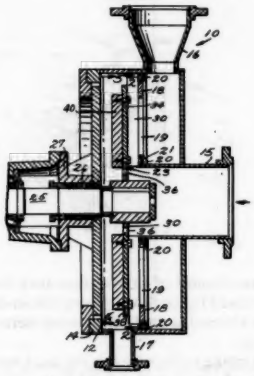
MEDIUM CONSISTENCY FLAT DISK PRESSURE SCREEN

Brian F. Greenwood, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Filed Dec. 16, 1982, Ser. No. 450,434
Int. Cl.[4] B07B *1/04*
U.S. Cl. 209—273 12 Claims

1. Apparatus for effecting screening of a suspension, comprising: an annular substantially flat plate screen; a closed chamber; means for stationarily mounting said annular screen

within said chamber; an inlet to said chamber substantially concentric with said annular screen; an outlet from said chamber on the opposite side of the said screen from said inlet; a disk comprising first and second faces, said first face having a plurality of vanes mounted thereon and extending generally radially therealong, at least some of said vanes including an end portion disposed raidally outwardly from said disk periphery; means for mounting said disk for rotation in said chamber with said disk substantially parallel to said screen and said vanes spaced a small axial distance from said screen so that said vanes move suspension over said flat plate screen; a rejects outlet



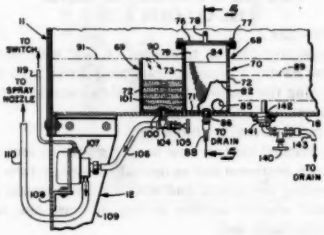
extending radially outwardly from said chamber and adjacent the periphery of said disk; means for rotating said disk at a speed sufficient for it to effect fluidization of suspension at the screen area as the suspension is being moved over the screen area by the disk vanes; and the disk being mounted in juxtaposition to the screen, and in cooperation with the inlet and outlets, so that the volume of suspension to be fluidized at the screen area is relatively low; and means for recirculating a portion of reject material from the second face of the disk to the first face thereof, said means comprising means defining a plurality of openings in said disk adjacent the center thereof.

4,543,182

PARTS WASHING AND/OR FLUID RECOVERY APPARATUS

Jack A. Gramse, Massillon, and Jon C. Pierce, Chardon, both of Ohio, assignors to Solvent Extractors Inc., Massillon, Ohio

Filed Apr. 1, 1983, Ser. No. 481,304
Int. Cl.[4] B01D *21/10;* B08B *3/00*
U.S. Cl. 210—95 **22 Claims**



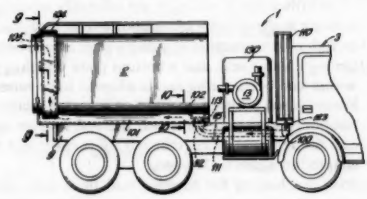
1. A fluid recovery and water discharge apparatus comprising an open top tank for receiving and collecting water and an immiscible fluid which has a specific gravity less than that of water whereby such fluid will float as a layer atop the water; water depth control means for maintaining the water collected in the bottom part of said tank below a predetermined level, said water depth control means including a chamber located in the lower part of said tank, said chamber having a bottom wall and side walls for separating the interior of said chamber from fluid and water collected in the lower part of said tank, a baffle between opposite side walls of said chamber and extending upwardly in said chamber to divide said chamber into a water inlet compartment and a water outlet compartment which open to an upper part of said chamber at opposite sides of a top spill edge of said baffle located at the predetermined level which is below the height of said chamber side walls, an inlet means to said water inlet compartment positioned below the predetermined level to allow water collected in the bottom part of said tank to pass into said water inlet compartment, and water drain means opening to said water outlet compartment below the predetermined level, whereby when the water in said water inlet compartment exceeds the predetermined level, water will spill over said top spill edge of said baffle for removal from said water outlet compartment via said water drain means; and fluid recovery means located in the lower part of said tank and opening to the interior of said tank at a top skimming edge located at an elevation slightly higher than said top spill edge of said baffle whereby such fluid floating atop the water will spill over said top skimming edge into said fluid recovery means, said chamber side walls extending above the elevation of said top skimming edge, and fluid outlet means opening to said fluid recovery means and leading from said fluid recovery means to the exterior of said tank, said fluid outlet means and water drain means being operable independently of one another to provide for simultaneous fluid skimming and water level control.

4,543,183

EDUCTOR TRUCK

Anthony V. Petretti, Whitestone, N.Y., assignor to Metro Hoist & Body Co., Inc., Whitestone, N.Y.

Filed Feb. 3, 1984, Ser. No. 576,751
Int. Cl.[4] B01D *21/00;* C02C *1/18*
U.S. Cl. 210—187 **14 Claims**



1. An eductor truck comprising a frame, a tiltable settling tank mounted on said frame, said settling tank having an eductor unit thereon, gas-directing means operatively associated with said settling tank for passing a hot gas along the settling tank; said hot gas comprising the exhaust from the said eductor truck, said gas being directed by conduit means along said settling tank, and a connect-disconnect link connecting the exhaust conduit means to said gas-directing means.

4,543,184
CAKE FILTRATION APPARATUS

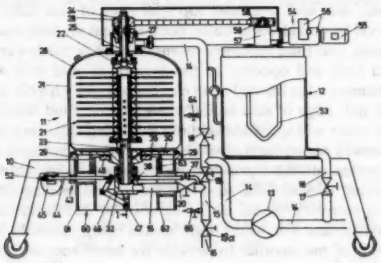
Karl Hoffmann, Bad Kreuznach; Dieter Krulitsch, Bad Münster am Stein, and Helmut Schwartz, Bad Kreuznach, all of Fed. Rep. of Germany, assignors to Seitz Enzinger Noll Maschinenbau Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,273

Claims priority, application Fed. Rep. of Germany, May 2, 1983, 3315898

Int. Cl.[4] B01N *29/02*

U.S. Cl. 210—193 19 Claims



1. A cake filtration apparatus which includes: a plate filter, which includes a filter unit which is formed from a stack of filter plates disposed on a shaft and is rotatable about its vertically disposed central axis for contrifuging filter cake; a filtering aid-dosing device which includes an agitator and a drive mechanism therefor; and pumps, lines, and valves for supplying said plate filter with slurry which is to be filtered, and for withdrawing filtrate therefrom; said apparatus further comprises:

a housing in which said filter unit is rotatably disposed, and which includes connections for supply of slurry to, and withdrawal of filtrate from, said plate filter; said housing includes a bottom and, secured thereto, a hood-like part which includes a peripheral wall and a top wall; said shaft of said filter unit is sealingly yet rotatably mounted in said housing in the vicinity of said bottom thereof; said bottom includes, in the manner of a disk valve, a fixed bottom ring having a valve seat, and a bottom plate which is disposed within said bottom ring and is adapted to be raised from a lower closed position, in which it is sealed relative to said bottom ring on said valve seat thereof; into an open position for removal of centrifuged filter cake, and which is adapted to again be lowered;

a drive mechanism for rotating said filter unit, with those parts of said last-mentioned drive mechanism intended for axial support and for rotation of said shaft of said filter unit being disposed on said top wall of said housing;

an automatically shiftable coupling, with said last-mentioned drive mechanism parts which are disposed on said top wall being driven by said drive mechanism for said agitator via said coupling; and

a control mechanism for effecting said opening and closing of said bottom plate by raising and lowering same independent of said filter unit.

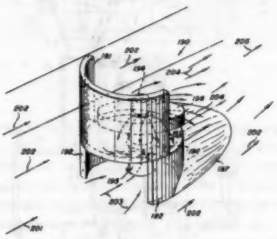
4,543,185
CONSERVATION OF MOMENTUM IN A BARRIER OXIDATION DITCH

John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401

Division of Ser. No. 282,592, Jul. 13, 1981, which is a division of Ser. No. 28,383, Apr. 9, 1979, Pat. No. 4,278,547, which is a continuation-in-part of Ser. No. 848,705, Nov. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 649,955, Jan. 19, 1976, abandoned. This application Sep. 30, 1982, Ser. No. 431,303

Int. Cl.[4] C02F *3/20*; F23D *11/04*

U.S. Cl. 210—194 5 Claims



1. In an endless channel of an oxidation ditch having a floor and containing mixed liquor flowing with circuit-flow momentum within said channel, a dual-baffle pump/aerator assembly which comprises:

A. a concave intake baffle which is disposed upon said floor and the axis of which is disposed to intercept the flow of said mixed liquor within said channel;

B. a horizontal barrier which has a single flow opening therethrough and is disposed above and is attached to said intake baffle, said opening having a draft tube therewithin;

a concave discharge baffle which is disposed above and is attached to said horizontal barrier, said intake baffle and said discharge baffle being angularly oriented from 90° to 180° apart; and

D. a surface aerator, comprising a motor and a vertically disposed shaft, which is flow connected to said draft tube and which radially disperses a circular discharge flow, said discharge baffle being radially spaced from said surface aerator and disposed to direct said discharge flow downstream.

4,543,186
APPARATUS AND METHOD FOR THE TREATMENT OF WELL WATER THEREWITH

Gale M. Weisenbarger, 140 Woodland Dr., Eaton, Ohio 45320, and John C. Moran, 3124 Lake Ave., Fort Wayne, Ind. 46805

Filed Jun. 8, 1984, Ser. No. 618,816

Int. Cl.[4] C02B *1/23*

U.S. Cl. 210—221.2 2 Claims

1. An apparatus for the treatment of raw well water in a water system having a pump for pumping water from the well and discharging the pumped water at above atmospheric pressure, said apparatus comprising:

(a) an aerator assembly comprising:

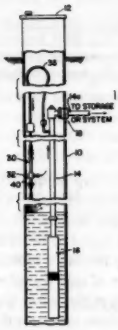
(a-1) a vertical venturi tube having a venturi section with an open upstream and an open downstream tube portion extending therefrom, and with the downstream portion of said venturi section having at least one aperture therethrough, and,

(a-2) a housing supporting said venturi tube and having a cavity therein surrounding the venturi section and a portion of the upstream and downstream portions of the tube extending from said venturi section, and further having an open lateral passage in communication with the cavity surrounding said venturi tube, the upstream

and downstream ends of said venturi tube extending from said housing;

(b) a magnetic unit having at least two elongated permanent bar magnets potted in a dielectric housing; and,

(c) a by-pass tube passing between the bar magnets in said magnetic unit and connecting the upstream end of said venturi tube to the water in the discharge side of the pump in said water system, the water flowing through said



by-pass tube being subjected to polarization by said magnetic unit and aerated as it flows through the venturi section of said venturi tube by ambient air being aspirated through the lateral passage in said housing and entering the flowing water through the apertures in the downstream portion of said venturi section of said venturi tube, the aerated water flowing from the downstream end of said venturi tube and discharging into the water in the well.

4,543,187

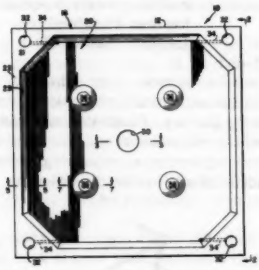
FILTER PLATE

Paul A. Steppacher, 2407 N. Washington Ave., Scranton, Pa. 18509

Continuation of Ser. No. 336,429, Dec. 31, 1981, abandoned. This application Aug. 8, 1984, Ser. No. 638,681

Int. Cl.[4] B01D *39/14;* **C02C** *1/22*

U.S. Cl. 210—232 **12 Claims**



1. A thermoplastic filter plate for use in a filter machine used in separating solids from liquids, the plate comprising a first separate component having a forward face including a filtrate drainage surface and a rearward face including means to provide support ribs; a second separate component which is substantially identical to said first component; and means to join said first and second components with their rearward faces opposing each other in mirror image fashion so that the support ribs of said first component operatively oppose the support ribs of said second component to provide a plate of minimum weight and sufficient strength.

4,543,188

APPARATUS FOR REMOVING FOREIGN MATTERS FROM CONDENSER COOLING WATER

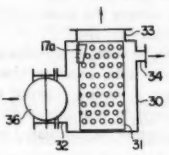
Isao Okouchi; Sankichi Takahashi, both of Hitachi; Kenkichi Izumi; Masahiko Miyai, both of Mito, and Katsumoto Otake, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 3, 1983, Ser. No. 548,506

Claims priority, application Japan, Nov. 5, 1982, 57-193326

Int. Cl.[4] B01D *35/24*

U.S. Cl. 210—304 **12 Claims**



1. A foreign matter removing apparatus for a condenser cooling water comprising:

a generally cylindrical barrel,

a filter mounted in said barrel, said filter having an upper and lower portion,

an unfiltered cooling water inlet pipe connected to a side portion of said barrel,

a filtered cooling water outlet pipe connected to an upper portion of said barrel,

a foreign matter discharge pipe connected to a side portion of said barrel,

a butterfly valve disposed in said unfiltered cooling water inlet pipe for adjusting the flow of water into said barrel to either directly flow into said barrel for filtering or to tangentially flow into said barrel for filter cleaning, and

flow blocking means on an upper portion of said filter opposite said cooling water inlet.

4,543,189

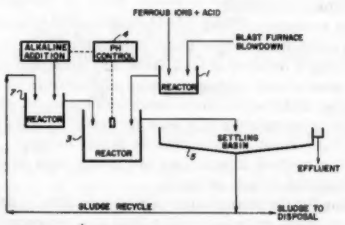
REMOVAL OF COMPLEXED ZINC-CYANIDE FROM WASTEWATER

Michael A. Rice, Bethlehem, and Stewart T. Herman, Hellertown, both of Pa., assignors to Bethlehem Steel Corp., Bethlehem, Pa.

Filed Jun. 13, 1984, Ser. No. 620,363

Int. Cl.[4] C02F *1/52*

U.S. Cl. 210—713 **6 Claims**



1. A method for removing soluble zinc and soluble cyanide from blast furnace blowdown wastewater comprising:

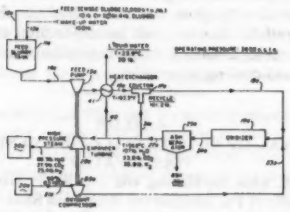
(a) processing to a first reactor a wastewater containing between 6 and 30 ppm of soluble cyanide and between 15 and 75 ppm soluble zinc, with the cyanide and zinc consisting essentially of a soluble zinc-cyanide complex compound;
(b) in the first reactor:
(i) adding soluble ferrous ion from the group consisting of ferrous sulfate, ferrous chlorides, or other soluble ferrous salt to bring the ferrous ion to between at least 250 to 400 ppm;
(ii) controlling the pH of the wastewater to below 7.0; and
(iii) stirring the wastewater to keep solids in suspension;
(c) processing the wastewater to a second reactor;
(d) in the second reactor:
(i) raising the pH of the wastewater to between 9.5 and 10.0 to form precipitates of prussian blue, zinc hydroxide and ferrous hydroxide; and
(ii) continuously stirring the wastewater to keep the precipitates in suspension; and
(e) processing the wastewater to a settling basin where precipitated zinc hydroxide, prussian blue and ferrous hydroxide settle into a sludge, leaving a liquid having a soluble zinc content of less than 0.45 ppm and a total soluble cyanide content of less than 3 ppm.

4,543,190

PROCESSING METHODS FOR THE OXIDATION OF ORGANICS IN SUPERCRITICAL WATER

Michael Modell, Cambridge, Mass., assignor to Modar, Inc., Natick, Mass.

Continuation of Ser. No. 393,813, Jun. 30, 1982, abandoned, and a continuation-in-part of Ser. No. 147,946, May 6, 1980, Pat. No. 4,338,199. This application Jun. 11, 1984, Ser. No. 619,394
The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.
Int. Cl.[4] C02F *1/72*
U.S. Cl. 210—721 **37 Claims**



1. The method of oxidizing an organic material in an oxidizer, which comprises:
forming a mixture of said organic material with water and a fluid comprising oxygen under conditions near supercritical including a pressure at least about 220 atmospheres, and
at the inlet of said oxidizer, causing said mixture to undergo reaction under supercritical conditions for water, characterized by a temperature of at least about 400° C. and a pressure of at least about 220 atmospheres in said oxidizer.

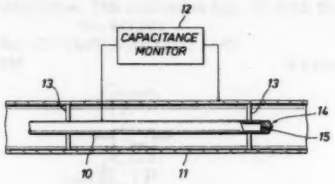
30. The method of removing inorganics from oxidized organic materials which comprises
providing for the precipitation of inorganic salts by contacting said oxidized materials with a fluid at a temperature of at least about 450° C. and a pressure of at least 220 atmospheres, and
separating said inorganic salts therefrom.

4,543,191

BS&W IN CRUDE OIL STREAMS

Thomas L. Stewart, Houston, and Florian C. Demny, Pasadena, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 10, 1981, Ser. No. 291,599
Int. Cl.[4] G01N *15/04*
U.S. Cl. 210—746 **10 Claims**



1. A process for reducing inequality between flow velocity within at least two dimensionally similar BS&W monitors, both of which have capacitance cells of at least two concentric tubes through which a liquid to be monitored is flowed, one of said monitors normally having a substantially greater volumetric flow than the other of said monitors, comprising, partially blocking the inner tube of the lesser flow monitor to the extent necessary to increase flow between the inner and outer tubes and to reduce inequality with flow between the inner and outer tubes of the greater flow monitor.

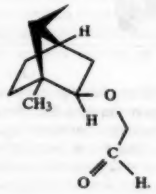
4,543,192

USE OF NORBORNYL OXYACETALDEHYDE IN AUGMENTING OR ENHANCING AROMA OF DETERGENTS OR FABRIC SOFTENERS

Robert P. Belko, Woodbridge; Richard M. Boden, Ocean, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 582,757, Feb. 23, 1984, Pat. No. 4,478,742, which is a division of Ser. No. 456,984, Jan. 10, 1983, Pat. No. 4,480,136, which is a continuation-in-part of Ser. No. 357,157, Mar. 11, 1982, Pat. No. 4,391,744, which is a division of Ser. No. 303,012, Sep. 17, 1981, Pat. No. 4,354,043. This application Jun. 13, 1984, Ser. No. 620,133
The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.
Int. Cl.[4] C11D *3/50*
U.S. Cl. 252—8.6 **2 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of intimately admixing with the said solid or liquid anionic, cationic, nonionic or zwitterionic detergent an aroma augmenting or enhancing quantity of the norbornyl oxyacetaldehyde having the structure:



4,543,193

PROCESS FOR PREVENTING THE PRECIPITATION OF ELEMENTARY SULPHUR IN RISER PIPES OF PROBES FOR NATURAL GAS

Siegfried Peter; Georg Hartel, both of Egerlandstrasse 3, 8520 Erlangen, and Wolfgang Bruckhoff, Reithorst 12, 3000 Hannover 51, all of Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 516,900

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3106362

Int. Cl.[4] E21B *37/00*

U.S. Cl. 252—8.55 B 12 Claims

1. A process for preventing the precipitation of elementary sulfur from natural gas which may contain hydrogen sulfide and/or carbonic acid together with elementary sulfur during the mining of the gas which comprises dissolving the sulfur in a solvent which is selected from the group consisting of esters of mono- or poly-unsaturated fatty acids; thioethers of said esters or mono- or poly-unsaturated fatty acids; the mixed reaction products of hydrogen sulfide and said esters or mono- or poly-unsaturated fatty acids in the presence of elementary sulfur; and mixtures thereof, said solvent being optionally used in form of a solution wherein said solvent contains 10 to 24 carbon atoms in the fatty acid component and 1 to 22 carbon atoms in the alcohol component.

4,543,194

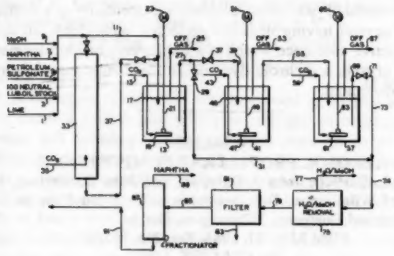
PRECARBONATION IN OVERBASING CALCIUM PETROLEUM SULFONATES

J. Ronald Spence, and Douglas S. Jack, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 28, 1984, Ser. No. 594,641

Int. Cl.[4] C10M *1/40*

U.S. Cl. 252—33 12 Claims



1. A method for overbasing a petroleum sulfonate in a multi-reaction system comprising:

(1) contacting a feedstream comprising $Ca(OH)_2$, neutral petroleum sulfonate, lubricating oil, methanol, and naphtha under reaction conditions of carbonation reaction temperature in a range of about 25° C. to about 80° C., and a carbonation reaction pressure in a range of about 1 psia to about 30 psia, in a plug flow reactor with carbon dioxide, said carbon dioxide present in an amount of a range of about 5 to about 10 percent by volume of the total CO_2 used in the process thereby producing a first treated product,

(2) contacting said first treated product in at least one continuous stirred tank reactor with additional carbon dioxide under reaction conditions of carbonation reaction temperature in a range of about 25° C. to about 80° C., and a carbonation reaction pressure in a range of about 1 psia to about 30 psia, in an amount in a range of about 95 to about 90 percent by volume of the total CO_2 used in the process with the total reaction time for steps (1) and (2) in a range of about 20 minutes to about 120 minutes.

4,543,195

FRICTION-REDUCING LUBRICATING COMPOSITIONS EACH COMPRISING AN ADDITIVE

Henri Grangette, Lyons; Bernard Constans, La Mulatiere, and Paul Maldonado, St. Symphorien D'Ozon, all of France, assignors to Elf France, Paris, France

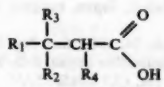
Filed Aug. 11, 1983, Ser. No. 522,240

Claims priority, application France, Aug. 11, 1982, 82 13986

Int. Cl.[4] C10M *1/32*

U.S. Cl. 252—33.4 6 Claims

1. A lubricating composition effective as a friction reducer comprising an overbased lubricating oil and a small percentage of an additive compatible with the oil, wherein the additive comprises at least one carboxylic acid substituted in positions α or β with respect to the acid function, represented by the formula:



wherein R_1, R_2, R_3 and R_4 are independently each a saturated or unsaturated C_1 to C_{22} hydrocarbon radical or hydrogen wherein when R_1 is a hydrocarbon radical, at least one of R_2, R_3 or R_4 is a hydrocarbon radical and when R_1 is hydrogen, at least R_4 or R_2 and R_3 are hydrocarbon radicals.

4,543,196

METHOD FOR MAKING GREASE FROM RECLAIMED OIL

Clark J. Flake, Trenton, Ohio, assignor to Armco, Middletown, Ohio

Filed Jun. 8, 1984, Ser. No. 618,523

Int. Cl.[4] C10M *1/24, 3/18, 5/14, 7/20*

U.S. Cl. 252—35 22 Claims

1. A method for making lubricating grease comprising the steps of:

(A) combining a base oil having a minimum viscosity of 430 SUS and including at least one reclaimed cold mill rolling oil, which upon reclamation contains from four percent to thirty percent by weight of a saponifiable compound selected from the group consisting of at least one fat and/or fatty acid, and at least one soap-forming compound which reacts with said saponifiable compound to form a soap, and

(B) thoroughly mixing the mixture of said reclaimed oil and said soap-forming compound, whereby a soap is formed in situ, said soap causing said reclaimed oil to thicken into a grease.

4,543,197

PROCESS FOR PRODUCING MAGNETIC METALLIC OXIDE

Tadayoshi Karasawa, Tokyo; Katsumi Kawano, Chiba; Katsuji Uchiyama, Togane, and Michio Yamazaki, Chiba, all of Japan, assignors to Japan Metals & Chemicals Co., Ltd. and Magune Co., Ltd., both of Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 488,265

Claims priority, application Japan, Apr. 27, 1982, 57-69650; May 12, 1983, 57-78082

Int. Cl.[4] C01G *49/08*

U.S. Cl. 252—62.56 13 Claims

1. A process for producing magnetic metallic oxide comprising the steps of:

pulverizing at least one member selected from the group consisting of ferro-manganese, ferro-nickel, electrolytic manganese, electroytic iron and electrolytic zinc, wherein said ferro-manganese and said ferro-nickel have a carbon content of at least 3% and said electrolytic manganese, said electrolytic iron and said electrolytic zinc are of high plurity,

adding to said pulverized material at least one member selected from the group consisting of oxides of Fe, Mn, Ni, Cu, Mg, Zn and Co and salts of Fe, Mn, Ni, Cu, Mg, Zn and Co which become oxides by heating,

ventilating the mixture with a gas containing oxygen and adding an aqueous solution containing at least one of an oxidizer and an acid radical,

wet pulverizing and mixing the mixture upon oxidation of said pulverized material, thereby producing a slurry, and

dehydrating, drying, and heating said slurry at 800° to 1450° C. to oxidize and calcine said slurry.

4,543,198

FERRITE MAGNETIC MATERIAL FOR MAGNETIC RECORDING AND PROCESS FOR THE PREPARATION THEREOF

Kouzi Kamiyama, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Feb. 14, 1984, Ser. No. 580,154

Claims priority, application Japan, Feb. 16, 1983, 58-24253

Int. Cl.⁴ C04B *35/26*

U.S. Cl. 252—62.59 **4 Claims**

1. A process for the preparation of a magnetoplumbite type ferrite magnetic material having the formula

$$RFe_{12-2x}M_xM'_xO_{19}$$

wherein R is at least one metal atom selected from the group consisting of barium, strontium and lead, M is at least one divalent metal atom selected from the group consisting of cobalt, nickel and zinc, M' is at least one tetravalent metal atom selected from the group consisting of titanium, zirconium and hafnium, and x is a number ranging from 0.6 to 1.0; and further containing from 1 to 1,000 ppm of platinum and/or gold therein, said process comprising the steps of

(1) melting a starting material mixture containing a basic component for hexagonal ferrite comprising Fe_2O_3 and at least one oxide selected from the group consisting of BaO, SrO and PbO or compounds convertible into said oxides during melting, a coercive force-reducing component including M and M', and glass-forming component,

(2) rapidly cooling the resulting molten mixture to obtain an amorphous material,

(3) heat-treating said amorphous material to form ferrite crystals and

(4) removing components other than ferrite crystals from the material resulting from said heat-treatment; characterized in that from 1 to 2,000 ppm of platinum and/or gold is contained in said starting material mixture, said magnetoplumbite type ferrite magnetic material having a narrower particle size distribution than said ferrite prepared as above, absent platinum and gold.

4,543,199

WATER BASE HYDRAULIC FLUID

Lawrence F. Kuntschik, Houston, Tex., and Claudia L. Dowe, Conshohocken, Pa., assignors to Texaco Inc., White Plains, N.Y.

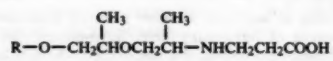
Filed Nov. 16, 1984, Ser. No. 672,046

Int. Cl.⁴ C09K *3/00*; C10M *3/04, 3/18, 3/26*

U.S. Cl. 252—75 **10 Claims**

8. A concentrated hydraulic fluid comprising:

(a) 35 to 45 wt % of an amphoteric surfactant of the formula:



wherein R is a C_{12} alkyl group;

(b) 8 to 12 wt % polypropylene glycol of molecular weight 200 to 600;

(c) triethanolamine, diethanolamine and modified phosphate ester in an amount sufficient to inhibit rust;

(d) phosphoric acid in an amount sufficient to inhibit aluminum corrosion;

(e) benzotriazole in an amount sufficient to inhibit copper corrosion; and

(f) water.

4,543,200

CONTACT LENS PRESERVATIVE SYSTEM CLEANER AND METHOD

Guy J. Sherman, Mandeville, La., assignor to Sherman Laboratories, Inc., Abita Springs, La.

Continuation-in-part of Ser. No. 537,257, Sep. 28, 1983, Pat. No. 4,510,065, which is a continuation-in-part of Ser. No. 384,110, Jun. 1, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 662,053

The portion of the term of this patent subsequent to Apr. 9, 2002, has been disclaimed.

Int. Cl.⁴ C11D *3/48*

U.S. Cl. 252—106 **14 Claims**

1. A contact lens cleaning composition comprising:

(a) trimethoprim, present in an effective amount for maintaining the sterility of the composition; and

(b) at least one cleaning component suitable for cleaning contact lenses.

4,543,201

LIQUID CRYSTAL MIXTURE

Yuzo Hayashi; Fumiaki Yamanashi, and Yoshiyuki Fujiwara, all of Iwaki, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 30, 1982, Ser. No. 431,177

Claims priority, application Japan, Oct. 26, 1981, 56-171260

Int. Cl.⁴ C09K *3/34*; G02F *1/13*

U.S. Cl. 252—299.1 **2 Claims**

1. A liquid crystal mixture consisting essentially of a nematic liquid crystal having negative dielectric anisotropy, an optically active substance which is a cholesteric or chiralnematic liquid crystal, a dichroic dye and an ionic substance 3,5-dinitrobenzoic acid.

4,543,202

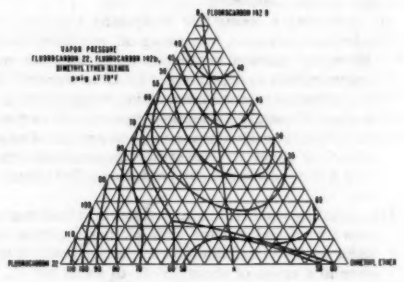
AEROSOL PROPELLANT COMPOSITIONS

Philip L. Bartlett; John J. Daly, Jr., and John D. Sterling, Jr., all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 23, 1984, Ser. No. 592,881

Int. Cl.⁴ C09K *3/30*

U.S. Cl. 252—305 **2 Claims**



1. An aerosol composition comprising 1–37% by weight of 1-chloro-1,1-difluoroethane, the balance being a mixture of monochlorodifluoromethane and dimethyl ether in a 40/60 weight ratio.

4,543,203

2-ISOPROPENYL-1,5-DIMETHYL-CYCLOPENTANE CARBOXALDEHYDE

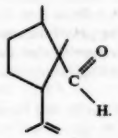
Michael Licciardello, Little Silver, and Richard M. Boden, Ocean, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 474,018, Mar. 10, 1983, Pat. No. 4,474,992. This application May 11, 1984, Ser. No. 609,346

Int. Cl.⁴ C11B *9/00*

U.S. Cl. 252—522 R **5 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of intimately admixing with said consumable material, an aroma augmenting or enhancing quantity of 2-isopropenyl-1,5-dimethyl-cyclopentane carboxaldehyde defined according to the structure:



4,543,204

SODIUM HIGHER FATTY ALKYL SULFATE DETERGENT LAUNDRY BARS AND PROCESS FOR MANUFACTURE THEREOF

Gregorio C. Gervasio, Metro Manila, Philippines, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 17, 1983, Ser. No. 524,010

Int. Cl.⁴ C11D *3/065, 17/00*

U.S. Cl. 252—531 **13 Claims**

1. A detergent laundry bar which is based on sodium higher fatty alcohol sulfate and which is resistant to breaking on storage and handling which comprises from 10 to 35% of sodium higher fatty alcohol sulfate having about 10 and 18 carbon atoms, 2 to 30% of water soluble inorganic phosphate builder salt for the sodium higher fatty alcohol sulfate, 20 to 60% of finely divided, water insoluble, inorganic, particulate material, 0 to 15% of non-phosphate water soluble salt selected from the group consisting of builder salt, filler salt and mixtures thereof, 7 to 16% of moisture and 1 and 10% of higher fatty acid of 10 to 18 carbon atoms.

4,543,205

COSMETIC CLEANSING COMPOSITION PARTICULARLY FOR REMOVAL OF EYE MAKE-UP

Jean-Claude Contamin, Chilly Mazarin, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France

Filed Oct. 25, 1984, Ser. No. 664,730

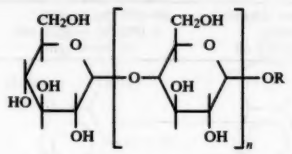
Claims priority, application France, Oct. 25, 1983, 83 16978

Int. Cl.⁴ C11D *1/84, 1/831*

U.S. Cl. 252—546 **12 Claims**

1. A cosmetic cleansing composition capable of removing eye make-up comprising in an aqueous solution a cleansing agent comprising a mixture of surface active agents in the below indicated amounts:

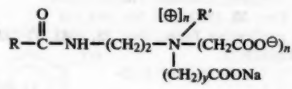
(i) from 0.1 to 2 percent by weight, based on the total weight of said composition, as active material, of a glucoside alkylether having the formula



(I)

wherein R represents alkyl having 8–12 carbon atoms, and n is equal to 0, 1, 2, 3, 4 or 5;

(ii) from 0.1 to 2 percent by weight, based on the total weight of said composition, as active material, of an amphoteric material of the formula



(II)

wherein

n is 0 or 1,

y is 1 or 2,

R represents a fatty chain having from 7 to 17 carbon atoms, and

R′ represents $-CH_2-CH_2OH$ or $-(CH_2)_2-O-(CH_2)_2-COONa$,

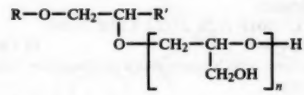
optionally in admixture with an oxyethylenated alkyl sulfate of the formula $C_{13}H_{27}-(OCH_2CH_2)_m-OSO_3Na$ wherein m is 1-4 (III); and

(iii) from 0.3 to 5 percent by weight, based on the total weight of said composition, as active material, of a compound selected from the group consisting of

(a) the monolaurate or the mono-oleate of sorbitan polyoxyethylenated with 20 moles of ethylene oxide,

(b) the monolaurate or the mono-oleate of glycerol polyoxyethylenated with 20 moles of ethylene oxide, and

(c) a non-ionic compound having the formula



(IV)

wherein

R represents a fatty chain having 8–10 carbon atoms,

R′ represents a fatty chain having 10–16 carbon atoms, and

n ranges from 10 to 12, the ratio n/R + R′ being between 0.4 and 0.6.

4,543,206

NAIL LACQUER AND ENAMEL REMOVER

Cornell L. Adams, 1199 Broad St., Newark, N.J. 07114

Filed May 3, 1984, Ser. No. 606,879

Int. Cl.⁴ A61K *7/047;* C11D *7/30, 7/50*

U.S. Cl. 252—557 **3 Claims**

1. A non-flammable nail polish remover for removing nail polish from human nails consisting of

a,	methylene chloride	88–93% by weight;
b,	white mineral oil	1% by weight;
c,	sodium dioctyl sulfosuccinate	0.75% by weight; and
d,	butyl acetate	5–10% by weight.

2. A method for removing nail polish from human nails comprising the step of contacting said nails with a non-flammable nail polish remover comprising

a,	methylene chloride	80–90% by weight;
b,	amyl acetate	9–19% by weight; and
c,	white mineral oil	1% by weight.

4,543,207

ELECTRICAL INSULATING OIL AND OIL-FILLED ELECTRICAL APPLIANCES

Atsushi Sato, Tokyo; Keiji Endo, Yokohama; Shigenobu Kawakami, Ichikawa; Hitoshi Yanagishita, and Shozo Hayashi, both of Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,741

Claims priority, application Japan, Dec. 25, 1982, 57-233237; Jul. 12, 1983, 58-126559

Int. Cl.[4] C10M *3/10*

U.S. Cl. 252—570 **11 Claims**

1. An electrical insulating oil consisting essentially of:

(a) at least one electrical insulating oil selected from the group consisting of organic acid esters, animal oils, vegetable oils and aromatic ethers, and

(b) 0.01 to 50% by weight of at least one of aromatic monoolefins and/or aromatic diolefins each having two condensed or noncondensed aromatic nuclei.

4,543,208

MAGNETIC CORE AND METHOD OF PRODUCING THE SAME

Hiromichi Horie, Yokosuka; Mikio Morita, Yokohama, and Itsuo Arima, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 23, 1983, Ser. No. 564,847

Claims priority, application Japan, Dec. 27, 1982, 57-226736; Jul. 8, 1983, 58-124408

Int. Cl.[4] H01F *1/26, 27/24;* **C04B** *35/04*

U.S. Cl. 252—62.54 **11 Claims**

1. A magnetic core, which comprises a compression molded product comprising:

a soft magnetic material selected from an iron powder, an iron alloy magnetic powder, and combinations thereof, said material having a mean particle size of 10 to 100 μm; and

1.5 to 40%, as a total amount in terms of volume ratio, of insulating binder resin and a non-ferrite insulating inorganic compound powder.

4,543,209

PROCESS FOR PREPARING GLOBIN FROM HAEMOGLOBIN AND GLOBIN OBTAINED BY THIS PROCESS

Jean L. Tayot, La Tour de Salvagny, and Jean L. B. Veron, St. Egrève, both of France, assignors to Institut Merieux

Filed Jul. 6, 1984, Ser. No. 628,285

Claims priority, application France, Jul. 7, 1983, 83 11324

Int. Cl.[4] A61K *35/14, 37/04;* **C07C** *103/52;* **C07G** *7/00*

U.S. Cl. 260—112 B **19 Claims**

1. A process for preparing globin from haemoglobin comprising preparing an alcoholic solution of haemoglobin at an acid pH, and treating said solution with active charcoal to adsorb the haem in the solution on said active charcoal and thereafter separating the charcoal from the solution.

4,543,210

PROCESS FOR PRODUCING A HIGH PURITY ANTIHEMOPHILIC FACTOR CONCENTRATE

Gautam Mitra, Kensington, and Paul K. Ng, Hercules, both of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 4, 1984, Ser. No. 658,081

Int. Cl.[4] C07G *7/00;* **A61K** *35/14, 35/16;* **A23J** *1/06*

U.S. Cl. 260—112 B **20 Claims**

1. In a process for producing high purity antihemophilic factor concentrate having enhanced specific activity and reduced fibrinogen impurity by the steps of:

(a) isolating an antihemophilic factor containing starting material selected from blood plasma and a blood plasma fraction;

(b) forming a solution of the so-isolated antihemophilic factor containing starting material from step (a);

(c) performing a first plasma protein precipitation by adding to the solution of the antihemophilic factor containing starting material from step (b) about 1–4% (w/v), based on volume of solution from step (b), of polyethylene glycol, and adjusting the pH of the resulting mixture to about 6.6–6.8 and the temperature of the resulting mixture to about 5–10° C., and agitating the resulting mixture for about 15 minutes;

(d) separating the precipitate and recovering the supernatant aqueous polyethylene glycol solution resulting from step (c);

(e) performing a second plasma protein precipitation by adjusting the polyethylene glycol concentration of the aqueous-polyethylene glycol solution from step (d) to about 9–15% (w/v), based on volume of solution from step (d), and adjusting the pH of the resulting mixture to about 5.7–6.8 and the temperature of the resulting mixture to about 5°–10° C. and agitating the resulting mixture for about 15 minutes; and

(f) separating the supernatant aqueous-polyethylene glycol solution and recovering the precipitate from step (e);

the improvement comprising

(i) combining with the polyethylene glycol in the first precipitation in step (c) a suspension containing about 1–3% by weight, based on total weight of suspension, of aluminum hydroxide in water, the aluminum hydroxide suspension being used in the ratio of about 0.1–0.25 g of aluminum hydroxide suspension per 1 g of protein in the starting antihemophilic factor containing starting material, and

(ii) combining with the polyethylene glycol in the second precipitation in step (e) about 10–20% by weight, based on total volume of solution in step (e), of glycine and about 10–20% by weight, based on total volume of solution in step (e), of sodium chloride.

4,543,211

CONJUGATE HAVING CYTOTOXICITY AND PROCESS FOR THE PREPARATION THEREOF

Yoshinori Kato; Naoji Umemoto, both of Hino; Takeshi Hara, Hachioji; Yutaka Tsukada, Ebetsu, and Hidematsu Hirai, Sapporo, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 21, 1983, Ser. No. 563,858

Claims priority, application Japan, Dec. 24, 1982, 57-226237

Int. Cl.[4] C07G *7/00;* **C07C** *103/52;* **A61K** *39/44, 39/395*

U.S. Cl. 260—112 B **11 Claims**

1. A conjugate having cytotoxicity comprising: (1) an immunoglobulin or a fragment, which is capable of selectively binding to a particular antigen possessed by a cell to be killed, and covalently bound thereto, via a carbonyl group at the amino terminal of a peptide polymer, by means of a bridge having at least one sulfur atom and a divalent linking group, (2) a peptide polymer having cytotoxic substances covalently bound to its side chain and having only one reactive group capable of covalently binding to said immunoglobulin, or its fragment,

said reactive group being at one terminal of said polymer, and wherein said polymer is not an immunoglobulin.

4,543,212

XERONINE, A NEW ALKALOID, USEFUL IN MEDICAL, FOOD AND INDUSTRIAL FIELDS

Ralph M. Heinicke, Honolulu, Hi., assignor to Research Corporation of the University of Hawaii, Honolulu, Hi.

Division of Ser. No. 329,953, Dec. 11, 1981, Pat. No. 4,409,144, which is a continuation-in-part of Ser. No. 870,919, Jan. 19, 1978, abandoned. This application Sep. 9, 1983, Ser. No. 530,689

The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.

Int. Cl.[4] **C07G** *17/00;* **C07C** *103/52;* **A01N** *63/02;* **C12N** *9/48, 9/50*

U.S. Cl. 546—1 **5 Claims**

1. A new composition of matter called Xeronine formed by the process comprising:

obtaining source materials selected from the group consisting of plant bacteria and animal alkaloid producing lipophilic extracts, combining lysozymes with the extracts to produce a mixture, controlling the concentration level of free calcium ions in the mixture to produce an optimum concentration level which activates the lysozymes, and controlling the pH of the mixture of the range of about 3.5–5.0 to react to the extracts with the activitated lysozymes to produce the active substance xeronine, having a molecular weight between 413 and 518, having four forms, three of which convert to a fourth form irreversibly by manipulation of temperature and pH, adapted to be adhered to specific proteins as a modifier of rigidity of a consequential wide range of effects.

4,543,213

PROCESS FOR PREPARING 2,3-DIHYDROXYBENZOIC ACID AMIDES OF TETRAAZAALKANES AND CYCLOALKANES

Frederick L. Weitl, Martinez, and Kenneth N. Raymond, Berkeley, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

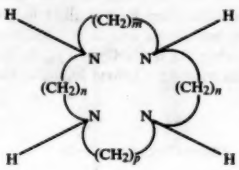
Division of Ser. No. 927,234, Jul. 24, 1978, Pat. No. 4,181,654. This application Aug. 7, 1979, Ser. No. 64,593

Int. Cl.[4] **C07D** *257/02;* **C07E** *102/00*

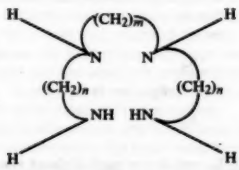
U.S. Cl. 260—239 BC **4 Claims**

1. A method for the 2,3-dihydroxybenzamidation of a tetraazaalkane which comprises:

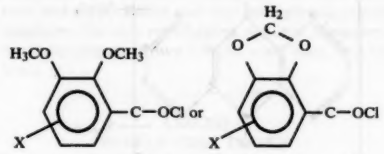
reacting a tetraazaalkane of the formula:



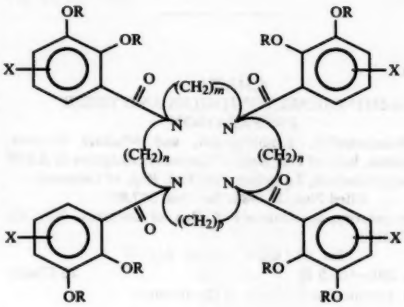
where: n is 2, 3 or 4, m is 2, 3 or 4, and p is 2 or 3, or of the formula:

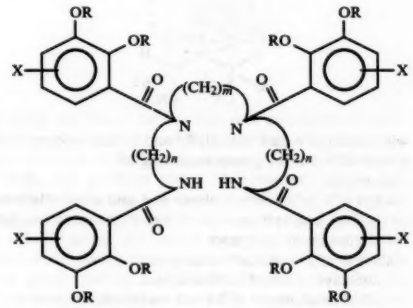


where n is 2, 3 or 4 and m is 2, 3 or 4, with a 2,3-dioxomethylenebenzoyl chloride or 2,3-dimethoxybenzoyl chloride of the formula:



wherein X is hydrogen, $—SO_3H$ or a salt thereof, or $—NO_2$, in the presence of at least one reaction moderator to form the corresponding amide of said tetraazaalkane and which amide has the formula:





where n, m, p and X are defined above;

reacting said amide of tetraazaalkane with boron tribromide or boron trichloride to form the corresponding catechol substituted amide of tetraazaalkane.

4,543,214

PROCESS FOR THE PREPARATION OF BROMOANTHRAQUINONES

Tibor Somlo, and Johann Regli, both of Birsfelden, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

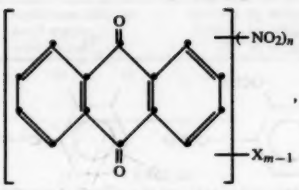
Filed Nov. 23, 1983, Ser. No. 554,650

Claims priority, application Switzerland, Jun. 23, 1983, 3431

Int. Cl.[4] **C07C** *49/68*

U.S. Cl. 260—384 **8 Claims**

1. A process for the preparation of pure bromoanthraquinones by denitrobrominating corresponding nitroanthraquinones, which process comprises treating nitroanthraquinones of the formula I



wherein X is hydroxy, mercapto, carboxy or halogen, m is 1, 2, 3 or 4 and n is 1 or 2, with elementary bromine in the temperature range from 200° C. to 350° C.

4,543,215

α-IMINODIACETONITRILES AND THEIR PREPARATION

Fritz Brunnmueller, Limburgerhof, and Michael Kroener, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

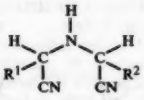
Filed Nov. 2, 1983, Ser. No. 547,851

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1982, 3242193

Int. Cl.⁴ C07C *121/42, 121/78*

U.S. Cl. 260—465.5 R **15 Claims**

1. An α-iminodiacetonitrile of the formula



I

where the individual radicals R^1 and R^2 are different and each is selected form the group consisting of:

hydrogen;

alkyl of 1 to 20 carbon atoms and said alkyl substituted by alkoxy or alkylthio, each of 1 to 4 carbon atoms, halogen, carboxamido or cyano;

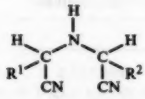
alkenyl of 2 to 20 carbon atoms;

cycloalkyl of 5 to 8 carbon atoms;

aralkyl or alkylaryl of 7 to 12 carbon atoms; and

phenyl.

4. A process for the preparation of an asymmetric α-iminodiacetonitrile of the formula



I

where the individual radicals R^1 and R^2 are different and each is selected form the group consisting of:

hydrogen;

alkyl of 1 to 20 carbon atoms and said alkyl substituted by alkoxy or alkylthio, each of 1 to 4 carbon atoms, halogen, carboxamido or cyano;

alkenyl of 2 to 20 carbon atoms;

cycloalkyl of 5 to 8 carbon atoms;

aralkyl or alkylaryl of 7 to 12 carbon atoms; and

phenyl,

which process comprises: reacting an aldehyde-cyanohydrin of the formula

II

where R^1 has the above meanings, with an aminonitrile of the formula

III

where R^2 has the above meanings but differs from R^1.

4,543,216

POLYMERIZABLE AMINO ACID COMPOUNDS AND THEIR PRODUCTION

Shinichi Ishikura, Kyoto; Tamotsu Yoshioka, Osaka, and Ryuzo Mizuguchi, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

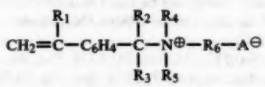
Division of Ser. No. 372,729, Apr. 28, 1982, Pat. No. 4,452,746, which is a continuation-in-part of Ser. No. 253,143, Apr. 10, 1981, abandoned. This application Mar. 29, 1984, Ser. No. 594,826

Claims priority, application Japan, Apr. 10, 1980, 55-47651; Apr. 10, 1980, 55-47652

Int. Cl.⁴ C07C *143/68*

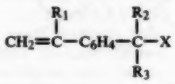
U.S. Cl. 260—501.12 **5 Claims**

1. A process for preparing a polymerizable amino acid compound of the formula:



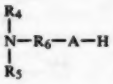
(I)

wherein R_1, R_2 and R_3 are each hydrogen or methyl, R_4 is C_1–C_{20} alkyl optionally substituted with at least one hydroxyl and optionally substituted with —O— or —COO— in the alkyl chain, R_5 is hydrogen or C_1–C_{20} alkyl optionally substituted with at least one hydroxyl and with or without —O— or —COO— in the alkyl chain, R_6 is an alkylene group having not more than 6 carbon atoms and A is —COO— or —SO_3—, provided that when R_4 is C_1–C_{20} alkyl, R_5 is not hydrogen which comprises reacting a benzyl halide of the formula:



(II)

wherein X is chlorine or bromine and R_1, R_2 and R_3 are each as defined above with an amino acid compound of the formula:



(III)

wherein R_4, R_5, R_6 and A are each defined above under basic conditions at a temperature of 0° to 150° C. in the absence or presence of a solvent.

4,543,217

PROCESS FOR MAKING CARBOXYLIC ACID HALIDES

Heinz Erpenbach, Cologne; Klaus Gehrmann; Winfried Lork, both of Erftstadt, and Peter Prinz, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 15, 1983, Ser. No. 561,805

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1982, 3248468

Int. Cl.[4] C07C *51/58*

U.S. Cl. 260—544 A 4 Claims

1. A process for making carboxylic acid halides by reacting an alkyl halide having 1 to 6 carbon atoms or aryl halide or benzyl chloride with carbon monoxide optionally containing up to 30 volume % hydrogen under practically anhydrous conditions at temperatures of 350° to 575° K. under pressures of 1 to 300 bars in the presence of a catalyst system containing at least one noble metal belonging to Group VIII of the Periodic System of the elements or its compounds, iodine and/or its compounds, optionally at least one compound selected from the non-noble metals Ce, Ti, Zr, Hf, Ge, Sn, Pb, V, Nb, Ta, As, Sb, Bi, Cr, Mo, W, Mn, Re, Fe, Co or Ni and optionally an inert organic solvent which comprises using a catalyst system essentially free of organic phosphorus compounds which additionally contains a compound of the elements belonging to groups I to III of the Periodic System and acetic acid, the amount of acetic acid included in the catalyst system being about 50–500 moles per mole of said noble metal or its compounds.

4,543,218

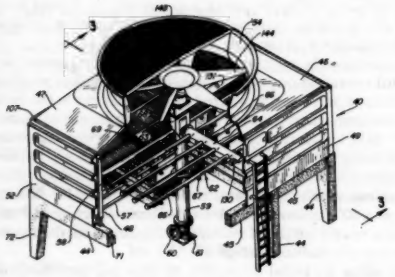
COOLING TOWER WITH CONCRETE SUPPORT STRUCTURE, FIBERGLASS PANELS, AND A FAN SUPPORTED BY THE LIQUID DISTRIBUTION SYSTEM

Charles J. Bardo, Fort Worth; Jesse Q. Seawell, Aledo; Anthony J. Dylewski, Arlington, and John L. Clark, Jr., Benbrook, all of Tex., assignors to Ceramic Cooling Tower Company, Fort Worth, Tex.

Filed Jul. 17, 1984, Ser. No. 631,591

Int. Cl.[4] B01F *3/04*

U.S. Cl. 261—24 9 Claims



1. A liquid cooling tower comprising:

(a) a plurality of concrete legs, each of the legs having a beam portion and pair of foot portions extending downwardly from the ends of the beam portion;

(b) a pair of concrete cross members extending between each adjacent pair of legs and attached thereto;

(c) porous means for heat/mass exchange supported by the concrete legs and the concrete cross members;

(d) a liquid supply pipe extending vertically upwardly through the heat-mass exchange means;

(e) liquid distribution means about the heat/mass exchange means and connected to the liquid supply pipe for supplying liquid to the heat/mass exchange means;

(f) a fan above the liquid distribution means and supported by the liquid distribution means and the liquid supply pipe for drawing air through the heat/mass exchange means; and

(g) side panels formed from fiberglass reinforced polyester resin and supported by said legs and extending upwardly therefrom, the side panels being required to support substantially only their own weight, wind loads, and seismic loads.

4,543,219

BAFFLE TRAY TOWER

Toshio Yamato, Takasaki; Tsutomu Ohba, Oita, and Tunetoshi Kabata, Takasaki, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1983, Ser. No. 550,196

Claims priority, application Japan, Nov. 24, 1982, 57-205627

Int. Cl.[4] B01F *3/04*

U.S. Cl. 261—109 22 Claims

1. A baffle tray tower for distillation or absorption of polymerizable unsaturated compounds comprising a tower body, a plurality of stages of baffle tray means disposed within said tower body, and partition plates, each disposed within said tower body transversing a vertically middle area of a curtain zone defined between two adjacent stages of said baffle tray means so as to divide the curtain zone into an upper curtain zone for mainly passing a gas therethrough and a lower curtain zone for mainly passing a liquid therethrough such that the upper curtain zone just below one baffle tray means allows the gas to be directed therethrough at increased speed to the liquid falling from said one baffle tray means.

4,543,220

PROCESS FOR UNITARY SHAPED-CHARGE STRUCTURE

H. William Voigt, Jr., Wharton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1984, Ser. No. 600,240

Int. Cl.[4] C06B *21/00*

U.S. Cl. 264—3 C 9 Claims

1. In an improved process of making a shaped-charge explosive comprising mixing an explosive with a thermoplastic polymer, shaping, and pressing the shaped explosive into a unitary structure wherein the improvement consisting essentially of dividing said explosive into a first and second part, coating said first part with a liquid urethane prepolymer, coating said second part with a mild liquid curing agent, combining said first and second coated parts at room temperature, shaping said combined parts at room temperature by pressing said shaped explosive into a unitary piece at room temperature with

about 20000 pounds per square inch for a dwell time of about 1 minute.

4,543,221

METHOD FOR MAKING CELLULOSE SEMIPERMEABLE HOLLOW FIBERS

David T. Chen, Clayton, and Robert D. Mahoney, San Ramon, both of Calif., assignors to CD Medical, Inc., Miami, Fla.

Division of Ser. No. 104,207, Dec. 17, 1979, abandoned. This application Oct. 21, 1981, Ser. No. 313,443

Int. Cl.⁴ B29D *27/00*

U.S. Cl. 264—41 **9 Claims**

1. A process for making a semipermeable cellulose hollow fiber having an ultrafiltration coefficient K_{UFR} in the range of about 2 to about 200 milliliters per hour per square meter per millimeter of mercury, a urea coefficient K_{urea} in the range of about 15×10^{-3} to about 45×10^{-3} centimeters per minute, and a wet intrinsic tensile strength in the range of about 2×10^{4} to about 11×10^{4} force per gram of cellulose polymer which comprises:

(a) melt spinning a hollow fiber cellulose ester fiber through a nozzle from a melt spin composition consisting essentially of about 36 to less than 50 weight percent cellulose ester and the balance at least one polyol having an average molecular weight between about 106 and about 900;

(b) hydrolyzing said cellulose ester fiber with an aqueous alkali solution free of glycerol, substantially into a cellulose hollow fiber;

(c) replasticizing said cellulose fiber while said fiber is still wet with a water soluble, essentially non-volatile plasticizer; and

(d) drying said plasticizer fiber.

4,543,222

PROCESS FOR PRODUCING A SHOE SOLE HAVING TWO WOODEN PARTS INTERCONNECTED BY A FLEXIBLE POLYURETHANE PART BENEATH THE BALL OF THE FOOT

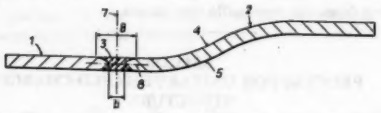
Johann Ehrlich, Krems/Weinzierl, Austria, assignor to Patoflex Corporation, Cave Creek, Ariz.

Division of Ser. No. 191,066, Sep. 26, 1980, Pat. No. 4,400,894. This application Jul. 8, 1983, Ser. No. 511,969

Claims priority, application Austria, Aug. 28, 1979, 6382/79

Int. Cl.⁴ B29D *27/00, 27/04*

U.S. Cl. 264—46.5 **3 Claims**



1. A method of making a sole construction for a shoe of the type having at least two prefabricated wooden parts which are interconnected at an area beneath the ball of the foot of a wearer by at least one flexible polyurethane intermediate part, said method comprising the steps of placing said wooden parts in a mold, the humidity content of said wooden parts being less than 6%, the interior of said mold being of substantially the same configuration as said sole construction, introducing a polyurethane foaming material into the remaining free space in the interior of said mold, allowing said material to foam with the mold closed to form said intermediate parts in interconnected relation with said wooden parts and removing the wooden parts and the intermediate parts connected thereto from the mold.

4,543,223

METHOD FOR THE DRY MOLDING OF FORMED PARTS

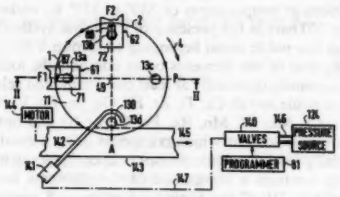
Horst Schreiner, and Bernhard Rothkegel, both of Nuremberg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 353,254, Mar. 1, 1982, abandoned, which is a continuation of Ser. No. 176,331, Aug. 8, 1980, abandoned. This application Dec. 14, 1983, Ser. No. 561,080

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932420

Int. Cl.⁴ B29J *5/00*

U.S. Cl. 264—120 **6 Claims**



1. In a method for the dry molding of formed parts of materials in powder form in a rotatable automatic press having a press tool with at least one mold and a lower and an upper punch associated therewith, said method comprising the steps of:

(a) automatically conveying powdered material into said mold at a first operating position;

(b) automatically rotating said press tool and thereby moving said mold to a second operating position;

(c) automatically pressing the powdered material in said mold at said second operating position to form a finished molded part;

(d) automatically rotating said press tool and thereby moving said mold to a third operating position, the steps of automatically rotating said press tool being accomplished in stepwise fashion to bring said mold together with said lower and said upper punch successively to at least some of the operating positons during each operating cycle of said automatic press; and

(e) automatically ejecting the finished molded part at said third operating position; an improved method of molding a formed part from powdered material having in the mold a precompaction geometry with a filling height to diameter ratio which is greater than two, said powdered material being amenable to bonding under adequately applied pressure and having a flowability characterized by a flow time exceeding 60 seconds per 100 g of powder flowing from a 60° standard funnel with a nozzle aperture of 4 mm and a nozzle length of 4 mm, said improved method comprising the additonal steps of:

(f) prior to an initial execution of step (a), providing an additional operating position between the first and second operating position;

(g) prior to an initial execution of step (a), providing the mold with at least two individual filling heights, step (a) including automatically filling the mold with the powdered material to a first of the individual filling heights at said first operating position;

(h) upon the execution of step (a), automatically rotating the press tool and thereby moving said mold to said additonal operating position;

(i) upon the execution of step (h), automatically filling said mold with the same powdered material at least to a second of the individual filling heights at said additional operating position, step (b) through (e) taking place upon the completion of step (i), steps (h) and (i) taking place immediately upon completion of step (g) so that two consecutive

filling steps at different operating positions occur prior to the pressing of step (c); and

(j) repeating steps (a), (h) and (i) and steps (b) through (e).

4,543,224
POLYMER STABILIZATION

Jerry O. Reed, and Ronald D. Mathis, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

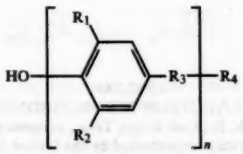
Continuation of Ser. No. 377,233, May 11, 1982, Pat. No. 4,434,122. This application Feb. 3, 1984, Ser. No. 576,979

The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.

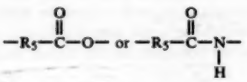
Int. Cl.⁴ C08K *5/20, 5/13, 5/10*

U.S. Cl. 264—211 **15 Claims**

1. In a process for producing film by melt extruding a poly-(arylene sulfide) resin having a melt flow of about 50 to about 400, the improvement for reducing gel formation during melt extrusion which comprises incorporating into said resin an effective heat and melt flow stabilizing amount of at least one phenolic amide or ester-based stabilizer having the formula:



where R_1 and R_2 can be an alkyl radical having from 1 to about 6 carbon atoms and R_1 and R_2 can be the same or different radicals; R_3 can be represented by the structure



where R_5 can be any alkylene or alkylidene radical having 1 to about 6 carbon atoms, R_4 can be R_5 or any alkyl radical having 1 to about 20 carbon atoms, and n is 1 when R_4 is an alkyl radical having 1 to about 20 carbon atoms, or n is 2 when R_4 is R_5, which amount is sufficient to retard curing and cross-linking of said resin during melt extrusion and thereby minimize gel formation in the processing equipment.

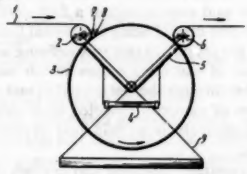
4,543,225
METHOD AND SYSTEM FOR REPRODUCING RELIEF STRUCTURES ONTO A SUBSTRATE

Joseph M. E. Beaujean, Grubbenvorst, Netherlands, assignor to Docdata N.V., Venlo, Netherlands

Filed Jul. 10, 1984, Ser. No. 629,219

Int. Cl.⁴ B30B *11/14*

U.S. Cl. 264—167 **21 Claims**



1. Method for reproducing relief structures onto a substrate, whereby between a die surface comprising holes or protuberances corresponding to the negative shape of the relief to be reproduced, and a substrate a hardenable liquid is deposited, whereafter the die surface and the substrate are least locally forced together whereby the respective section of the die surface does not move in relation to the substrate in any other direction than perpendicular to the contact surface, whereafter the hardenable liquid hardens during which process there is no mutual movement between the die surface and the substrate both of which remain forced together with a pressure which is smaller than the pressure during the initial pressing stage, and the substrate and the die surface are separated after the liquid is hardened, *characterized in that* there are significant differences in the chemical or physical parameters which have influence onto the hardening process between those liquid parts forming the higher relief parts and those liquid parts forming the lower relief parts.

4,543,226
METHOD AND APPARATUS FOR HEAT SETTING FASTENER ELEMENTS

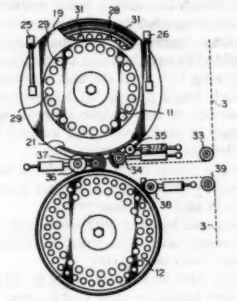
Yoshiyuki Horita, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 26, 1984, Ser. No. 604,163

Claims priority, application Japan, May 2, 1983, 58-78035

Int. Cl.⁴ B29C *23/00;* **B29D** *5/00*

U.S. Cl. 264—230 **5 Claims**



1. A method of heat setting fastner elements on a fastener chain comprising a pair of interlocked fastencr stringers each of which consists of a tape having a formed thermoplastic wire forming the fastener elements sewn thereon, said method comprising steps of:

(a) contracting the formed wire, while heating the fastener chain, until a pitch possessed by the fastener elements attains a predetermined value smaller than a value of a desired pitch, and

(b) subsequently cooling the formed wire while stretching the formed wire until the pitch possessed by the fastener elements attains the value of the desired pitch.

4,543,227
METHOD OF TREATING REFRACTORY BORIDE SHAPES

Richard H. Biddulph, Surrey, England, assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Mar. 22, 1984, Ser. No. 592,200

Claims priority, application United Kingdom, Mar. 28, 1983, 8308478

Int. Cl.⁴ C04B *35/60*

U.S. Cl. 264—233 **7 Claims**

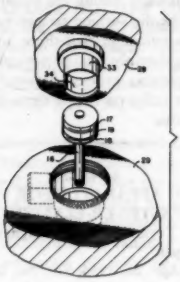
1. In the method for forming titanium diboride shapes by hot pressing said diboride in a carbon containing die, the improvement which comprises treating said formed shape with molten alkali metal hydroxide, thereby removing the carbon-rich surface layer therefrom.

4,543,228

INJECTION MOLDED SLIDING VANE PUMP

Douglas J. Bingler, Furlong, Pa., assignor to Milton Roy Company, St. Petersburg, Fla.

Filed Jan. 13, 1984, Ser. No. 570,328
Int. Cl.[4] B29B *3/00*
U.S. Cl. 264—275 **1 Claim**



1. The method of plastic injection molding of the housing for a pump which includes a rotor which rotates within a close tolerance pump chamber, said rotor being in an assembly having openings therein which connect an inlet port and an outlet port molded in said housing comprising:

positioning two semi-circular holding inserts in a mold base which has a cavity for forming said housing with said chamber in the middle thereof, said inserts being positioned in said cavity and located to form said inlet and outlet ports during molding;

placing a pump rotor assembly in said cavity, and held in place by said inserts with said inserts covering the openings in said rotor assembly;

forming said housing with said pump chamber having a close tolerance with said rotor assembly by injecting molten plastic into said cavity;

forming inlet and outlet ports in said housing by injecting molten plastic around said inserts;

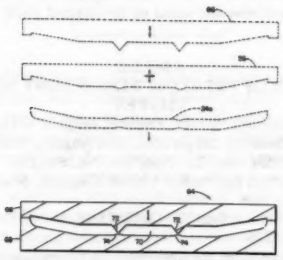
removing said housing from said mold; and removing said inserts to form said inlet and outlet.

4,543,229

METHOD OF MANUFACTURING HINGED CELLULAR INSULATING INSERTS FOR MASONRY BUILDING BLOCKS

David L. Nickerson, 27 Leemond St., Wilbraham, Mass. 01095

Division of Ser. No. 339,147, Jan. 13, 1982, Pat. No. 4,462,195. This application Jul. 8, 1983, Ser. No. 511,843
Int. Cl.[4] B29D *27/00*
U.S. Cl. 264—46.4 **13 Claims**



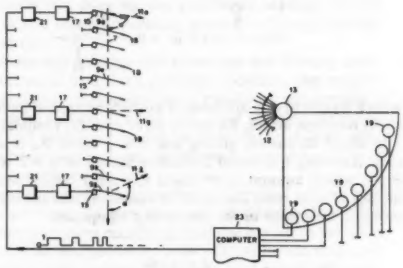
1. A method for making a preformed cellular insulating insert having central and hinged opposite side sections and foldable from a flat condition to a U-shaped configuration for insertion in a building block cavity; said method employing a transfer process with associated hot and cold molds and comprising the steps of providing a hot mold with a thin flat generally rectangular cavity defining the central and opposite side sections of the insert and partially defining a pair of spaced parallel hinges sections residing respectively between the central and side sections, providing a cold mold with a similar thin flat generally rectangular cavity defining the central and opposite side sections of the insert and also finally defining the pair of spaced parallel hinge sections said hinge sections being of reduced thickness viewed from the end and having corresponding cold mold forming parts, molding an insert in the hot mold and transferring the same to the cold mold while it remains in a moldable condition, and further molding the insert in the cold mold particularly at the hinge sections where said hinge forming mold parts compress the cellular material of the insert to an increased density and thus provide integral hinges of substantial strength.

4,543,230

PULSED-NEUTRON MONOCHROMATOR

Herbert A. Mook, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 31, 1983, Ser. No. 480,634
Int. Cl.[4] G01C *1/36*
U.S. Cl. 376—110 **12 Claims**



1. A pulsed-neutron monochromator for use in time-of-flight spectrometry, comprising:

a row of elongated neutron-monochromator crystals disposed in a neutron beam, each crystal being oriented to reflect part of the neutrons incident thereon onto a common target, said row including a first crystal and a last crystal, the first crystal being the crystal first intercepting said beam, the crystals in said row defining with said beam a succession of scattering angles which increase in size from the first through the last crystal of said row whereby the energies of neutrons reflected from said crystals increases successively from said first crystal to said last crystal, and

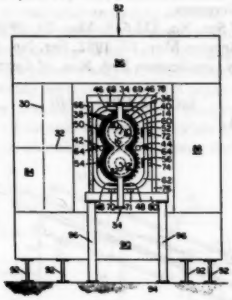
means for sequentially vibrating said crystals of said row in a timed sequence of short duration from said last crystal through said first crystal whereby neutrons reflected from said crystals and elastically scattered from said common target arrive simultaneously at a plurality of neutron detectors deployed in an array at equal distances from said target.

4,543,231

MULTIPLE PINCH METHOD AND APPARATUS FOR PRODUCING AVERAGE MAGNETIC WELL IN PLASMA CONFINEMENT

Tihiro Ohkawa, La Jolla, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Filed Dec. 14, 1981, Ser. No. 330,361
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—133 29 Claims



1. A method for generating and containing plasma with a multipole plasma pinch comprising:

generating plasma;

passing current through the plasma in a plurality of discrete channels to form respective z-pinches therein which generate at least one hyperbolic magnetic axis within said plasma, each of said channels being disposed within the plasma and containing a respective set of nested closed magnetic surfaces defining a magnetic axis extending in the direction of current flow, said channels and said at least one hyperbolic axis being surrounded by an additional set of nested closed magnetic surfaces within the plasma; and

forming an average magnetic well encompassing substantially all of said plasma while maintaining a safety factor q having an absolute value less than 1 substantially everywhere in the plasma.

4,543,232

GAS COOLED HIGH TEMPERATURE REACTOR

Claus Elter, Bad Durkheim; Gerhard Noll, Mannheim; Josef Schoening, Hambruecken; Hans-Georg Schwiers, Ketsch, and Wilfried Stracke, Oftersheim, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,694
Claims priority, application Fed. Rep. of Germany, May 27, 1980, 3020124
Int. Cl.[4] G21C *11/08, 11/06*
U.S. Cl. 376—289 7 Claims

1. A gas cooled high temperature nuclear reactor comprising:

a pressure vessel having a vessel roof;

a reactor core within said pressure vessel;

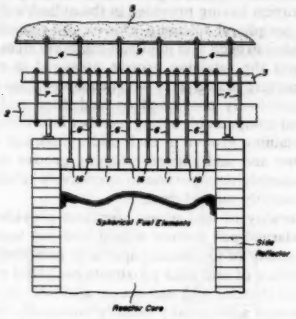
a pile of spherical fuel elements in said reactor core;

at least one primary support member extending from said vessel roof;

a thermal roof shield supported from said primary support member;

a plurality of graphite blocks forming a roof reflector above said pile of spherical elements;

a plurality of primary suspension bolts extending from said primary support member connecting said plurality of graphite blocks wherein said suspension bolts are threaded



at one end and are hollow to permit the flow of cooling gas therethrough.

4,543,233

MECHANICALLY ATTACHED LOAD PAD FOR LIQUID METAL NUCLEAR REACTOR FUEL ASSEMBLIES

Jeffrey M. Grover, Kennewick, Wash., and Luanne S. Williams, Pleasanton, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 8, 1982, Ser. No. 366,458
Int. Cl.[4] G21C *3/30*
U.S. Cl. 376—446 4 Claims

1. In combination with a fuel assembly for a liquid-metal-cooled nuclear reactor, said fuel assembly comprising an elongated hollow duct formed with six elongated wall surfaces, the improved load-pad assembly for said fuel assembly duct comprising:

each elongated wall surface of said duct which is to be provided with at least one load-pad assembly having at least one load-pad-receiving cylindrical aperture provided in the external surface thereof to receive a portion of said load-pad assembly;

each said load-pad assembly having an enlarged cylindrical pad portion and a cylindrical stem portion projecting from said enlarged pad portion, each said load-pad-assembly stem portion projecting into one of said cylindrical apertures in said duct with the enlarged pad portion of said load-pad assembly overlying those portion of said duct which surround said one cylindrical aperture in said duct, and the exposed surface of each said enlarged pad portion of said load-pad assembly having a flattened centrally disposed surface portion which projects from the external surface of said duct in which said load-pad assembly is located;

a portion of each said aperture in said duct having provided in the cylindrical surface thereof a peripheral retaining groove, a portion of each said load-pad-assembly stem portion having provided in the cylindrical surface thereof a peripheral retaining groove, the retaining groove provided in each said load-pad-assembly stem portion aligned with the retaining groove provided in each cylindrical aperture in said duct when each said load-pad assembly is operatively positioned on said duct, and an expandable and compressible spring member interfitting into both said retaining groove in each said cylindrical aperture in said duct and said aligned retaining groove in said load-pad-assembly stem portion to operatively retain said load-pad-assembly on said duct;

a plurality of tool-access apertures provided through said enlarged pad portion of said load-pad assembly;

a plurality of tool-access apertures provided in the external surface of said duct proximate each said cylindrical aperture therein, said tool-access apertures in said duct being located substantially radially outwardly from said retaining groove in said cylindrical surface of each said cylindrical aperture in said duct and opening into said retaining grooves, and said tool-access apertures in said enlarged pad portion of said load-pad assembly being alignable with said tool-access apertures in said duct; whereby said spring member can be compressed by a tool inserted through said tool-access apertures when aligned to compress said spring member into said retaining groove in said stem portion of said load-pad assembly to permit both insertion and removal of each said load-pad assembly from said duct.

4,543,234

OXIDATION RESISTANT MAGNESIUM ALLOY

George S. Foerster, Greeneville, Tenn., assignor to N L Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 195,236, Oct. 20, 1980, abandoned, which is a continuation-in-part of Ser. No. 41,802, May 23, 1979, abandoned. This application Sep. 29, 1982, Ser. No. 427,752

Int. Cl.⁴ C22C *23/02*

U.S. Cl. 420—409 **10 Claims**

1. A magnesium alloy characterized by having good resistance to oxidation in the molten state, good corrosion resistance and good tensile strength, said alloy consisting essentially of up to 12 percent of aluminum, up to 30 percent of zinc, up to 1.5 percent of silicon, from 0.04 percent to 0.15 percent of manganese, and a given amount of dissolved beryllium, the given amount constituting from 0.0025 percent to 0.0125 percent of the alloy, balance essentially magnesium, wherein the manganese content of the alloy is sufficiently low that it does not prevent dissolution of the given amount of beryllium, wherein the relative proportions of aluminum and zinc are such that the alloy is castable and ductile, and is not subject to hot cracking and wherein the alloy contains at least 2 percent of aluminum or zinc in an amount greater than 3 percent and sufficiently high that the alloy has the degree of fluidity in the molten state requisite for die casting.

4,543,235

EUTECTIC SUPERALLOY COMPOSITIONS AND ARTICLES

Franklin D. Lemkey, Windsor, Conn., and Irving Machlin, Silver Spring, Md., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 22, 1982, Ser. No. 421,675

Int. Cl.⁴ C22C *19/05*

U.S. Cl. 420—443 **6 Claims**

1. In a eutectic superalloy composition, intended for use in directionally solidified form, consisting essentially of 6.7–7.1 weight percent aluminum, 11.8–12.8 weight percent chromium, 0–1 weight percent yttrium, about 1.5% carbon, balance nickel, the improvement which comprises: adding from about 0.7 to about 1.4 atomic percent of an element selected from the group consisting of manganese, technetium and rhenium, and mixtures thereof, whereby improved surface stability and mechanical properties result.

4,543,236

INCUBATING APPARATUS FOR SELECTIVE AND EXACT TREATMENT OF HISTOLOGICAL PREPARATIONS

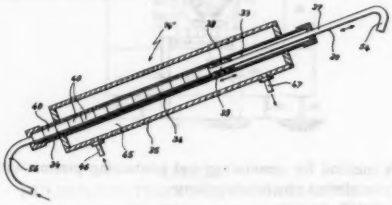
Hardo F. von Gise, Schwärzlocher Strasse 110, 7400 Tübingen, Fed. Rep. of Germany

Continuation of Ser. No. 135,619, Mar. 31, 1980, abandoned. This application Mar. 12, 1982, Ser. No. 357,555

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915248

Int. Cl.⁴ G01N *1/30*

U.S. Cl. 422—50 **4 Claims**



1. Incubation apparatus for use in the processing of histological preparations, having reagent storage means including a plurality of reagent containers, said containers being connectable with incubating means for the holding of a plurality of preparations, said incubating means comprising at least one treatment chamber having an inlet and an outlet at different ends and being composed of tubing within which gas and liquid permeable specimen capsules are arranged in adjoining relationship and are in abutment by means of a hollow piston.

4,543,237

APPARATUS FOR CONTINUOUSLY MEASURING ACID GRAVITY IN A HYDROCARBON-ACID SYSTEM

Orlando Webb, Jr., deceased, late of Lee's Summit, Mo., and by Carlene M. Webb, representative, R.R. 4, F-12, Lee's Summit, (Jackson County), Mo. 64063

Filed Jul. 29, 1982, Ser. No. 403,027

Int. Cl.⁴ G05D *7/00, 9/00*

U.S. Cl. 422—62 **4 Claims**

1. In an acid catalyzed reactor having means for controllably introducing a quantity of acid catalyst into said reactor; said reactor being of the type requiring a quantity of make-up acid to be added to said reactor through an acid supply line during continuous operation of said reactor for optimum production of alkylate the improvement being wherein said means for controllably introducing acid into said reactor comprises:

(a) a collecting vessel for receiving a quantity of product from the reactor; said vessel having a bottom and spaced side walls extending upward from said bottom; said side walls being sealably joined at respective ends thereof with each other and with said bottom so as to be fluid containing;

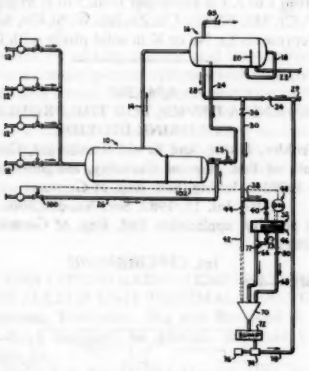
(b) structure coupling said reactor with said vessel for continuously delivering to said vessel a portion of the product having acid and organic fluid alkylate therein from said reactor;

(c) said vessel including a disengaging chamber positioned between said walls and operably allowing substantially all of said acid in the product to gravitate to a lower portion of the chamber so as to separate the product entering said disengaging chamber into separated acid and separated

alkylate; said coupling structure delivering the product portion directly into said disengaging chamber;

(d) said vessel further including an acid-analyzing section communicating with said chamber to receive the separated acid; said acid-analyzing section being separated from said disengaging chamber by first baffle means connected to said vessel walls and operably cooperating with said vessel bottom to allow said separated acid to flow past said first baffle means from said disengaging chamber to said acid-analyzing section and further operably blocking flow of said separated alkylate from said disengaging chamber to said acid analyzing section;

(e) said vessel also including an organic fluid receiving section communicating with said disengaging chamber to receive the separated alkylate therefrom; said disengaging chamber being separated from said organic fluid receiving section by second baffle means cooperating with said vessel to allow said separated alkylate to flow from said disengaging chamber to said organic fluid receiving section and operably blocking flow of said separated acid between said disengaging chamber and said organic fluid receiving section;



(f) acid gravity measuring means disposed in said acid-analyzing section for continuously sensing the specific gravity of the separated acid;

(g) first outlet means from said acid analyzing section for discharge of said separated acid therefrom after sensing the specific gravity of said separated acid;

(h) second outlet means cooperating with said organic fluid receiving section for discharge of said separated alkylate therefrom; and

(i) valve means disposed in an acid supply line and operably coupled with said measuring means for providing increases or decreases in the flow of make-up acid into said reactor in response to variations in the specific gravity of the separated acid as sensed by said gravity measuring means whereby the quantity of acid in the reactor is maintained at an optimum level.

4,543,238

SAMPLING APPARATUS

Tomonori Mimura; Hisayuki Sagusa; Takehide Satou, and Katsuaki Takahashi, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1983, Ser. No. 530,630

Claims priority, application Japan, Sep. 13, 1982, 57-158157

Int. Cl.⁴ G01N *35/02, 35/04*

U.S. Cl. 422—63 **6 Claims**

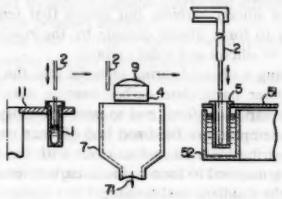
1. A sampling apparatus comprising:

sample container conveying means for conveying a plurality of sample containers,

reaction container conveying means for conveying a plurality of reaction containers,

pipetting tube means for transferring a sample from a sample container to a reaction container,

wash vessel means situated in a pathway between said sample container conveying means and said reaction container conveying means and having cutouts formed in sidewalls thereof for passing said pipetting tube means across and through said wash vessel means, and



control means for controlling the movement of said pipetting tube means and supplying cleaning liquid in said wash vessel means, wherein the lower end of said pipetting tube means extends vertically below the uppermost edge of a wall of said wash vessel means, and said control means moves said pipetting tube means through the wall of said wash vessel means by passing across said cutouts.

4,543,239

PHOSPHORIC ACID EXTRACTION PROCESS

Martin J. Jacobs, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Aug. 21, 1984, Ser. No. 642,929

Int. Cl.⁴ C01B *25/16*

U.S. Cl. 423—321 S **7 Claims**

1. A method of extracting phosphoric acid from wet process phosphoric acid containing impurities which comprises contacting the wet process phosphoric acid with an effective phosphoric acid-extracting amount of an N,N-dialkyl-α-aminoacid wherein the N,N-dialkyl-α-aminoacid is dissolved in a diluent and recovering the phosphoric acid therefrom.

4,543,240

METHOD FOR THE CONTINUOUS PRODUCTION OF CARBIDES

William M. Goldberger, Columbus, Ohio, assignor to Superior Graphite Co., Chicago, Ill.

Division of Ser. No. 119,680, Feb. 8, 1980, abandoned. This application Jan. 14, 1985, Ser. No. 691,076

Int. Cl.⁴ C01B *31/36*

U.S. Cl. 423—346 **2 Claims**

1. The method of making silicon carbide-bearing material comprising the steps of:

introducing into a heat resistant vessel a relatively coarse particulate carbon-bearing material;

introducing a sufficient flow of non-reactive gas through a gas distribution member to bring the particulate carbon-bearing material into the state of fluidization;

applying an electric potential between electrodes positioned to be in direct contact with the fluidized carbon-bearing material particles to cause electric current to flow through the bed material between the electrodes in direct contact with the fluidized bed and at a rate sufficient to heat the said fluidized bed to a temperature in excess of the temperature of decomposition of silicon carbide;

introducing a finer particulate carbon-bearing material into the fluidized bed of coarser particulate carbon-bearing material;

controlling the relative size difference of the coarser and finer particulate carbon-bearing material and the velocity

of the fluidizing gas to cause the finer particulate carbon-bearing material to be maintained in a state of dense phase fluidization in a region above the fluidized bed of the coarser particulate carbon-bearing material;

removing heat from the zone of the fluidized bed of the finer particulate carbon-bearing material sufficient to cause the temperature of the fluidized bed of the finer particulate carbon-bearing material to be lower than the temperature of the fluidized bed of the coarser particulate carbon-bearing material and below that of the decomposition temperature of silicon carbide, but above that temperature required to form silicon carbide by the reaction of vapor forms of silicon and solid carbon;

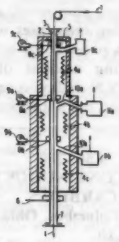
introducing a silicon-bearing material into the fluidized bed of coarser particulate carbon-bearing material to cause silicon vapors to form and to pass upwardly through the lower temperature fluidized bed of finer particulate carbon-bearing material and to react with the finer carbon-bearing material to form a silicon carbide-bearing material from the fluidized bed furnace.

4,543,241

METHOD AND APPARATUS FOR CONTINUOUS PRODUCTION OF CARBON FIBERS

Osamu Yoshinari; Makoto Sugiyama, and Hideki Nakai, all of Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 486,168
Int. Cl.⁴ D01F *9/14*
U.S. Cl. 423—447.7 **18 Claims**



1. A method for producing carbon fibers using a vertical carbonizing furnace having a heating chamber therein, which comprises heating the chamber in such a manner that the temperature gradually increases from the upper end toward a lower end of the heating chamber, introducing a fiber to be carbonized from a fiber inlet provided at the upper end of the chamber, introducing an inert gas from a gas inlet provided at the lower end of the chamber to render the atmosphere in the chamber non-oxidizing, injecting an inert gas from at least one injection hole in at least one portion between the fiber inlet and the gas inlet to form a curtain of the inert gas across the heating chamber to prevent decomposition gases formed in the heating chamber to ascend, discharging the decomposition gases with the inert gas from at least one gas outlet each being provided at a lower portion of each inert gas injection portion, and recovering carbonized fiber from a fiber outlet provided at the lower portion of the heating chamber, wherein the heating chamber is heated to a temperature having an incline of from more than 300° to not more than 950° C. and wherein each of said gas outlets is provided at a position as close as possible to each injection hole.

4,543,242

PROCESS OF PREPARING NITROGEN TRIFLUORIDE BY GAS-SOLID REACTION

Minoru Aramaki; Yoshiyuki Kobayashi; Tamio Nakamura; Hisaji Nakano, all of Ube, and Takashi Suenaga, Yamaguchi, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Sep. 19, 1984, Ser. No. 651,944
Claims priority, application Japan, Sep. 27, 1983, 58-177016
Int. Cl.⁴ C01B *21/52*
U.S. Cl. 423—406 **8 Claims**

1. A process of preparing nitrogen trifluoride comprising the step of reacting an ammonium complex of a metal fluoride corresponding to the general formula $(NH_4)_xMF_y$, where x is an integer from 1 to 3, y is an integer from 5 to 7, and M represents Fe, Al, Ti, V, Cr, Mn, Ni, Co, Cu, Zr, Nb, W, Si, Ge, Sb, Sn or Pb in solid phase with fluorine gas.

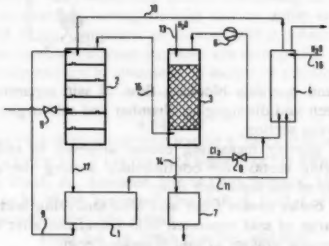
5. A process or preparing nitrogen trifluoride comprising the step of reacting an ammonium complex of a metal fluoride corresponding to the formula $(NH_4)_xMM'F_y$ where x is an integer from 1 to 3, y is an integer from 5 to 7, M represents Fe, Al, Ti, V, Cr, Mn, Ni, Co, Cu, Zr, Nb, W, Si, Ge, Sb, Sn, or Pb, and M' represents Li, Na or K in solid phase with fluorine gas.

4,543,243

PROCESS AND A DEVICE FOR THE PRODUCTION OF CHLORINE DIOXIDE

Hanns Fröhler, Icking, and Erwin Rossberger, Grossdingharting, both of Fed. Rep. of Germany, assignors to Dipl.-Ing. Hanns Fröhler, Icking, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,506
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1981, 3128817
Int. Cl.⁴ C01B *11/02*
U.S. Cl. 423—478 **5 Claims**



1. A process for the continuous production of chlorine dioxide wherein

(a) an alkali metal chlorate solution containing alkali chloride is reacted with hydrochloric acid to form a gaseous mixture of ClO_2 and Cl_2 and an alkali metal chloride solution depleted of chlorate, in a cascade reactor under an underpressure of 0.2 to 0.3 bar at the outlet of the cascade reactor, and a flow of air is introduced into the reactor to maintain a partial pressure of ClO_2 not exceeding 0.15 bar,

(b) the gaseous mixture is passed into a separation column where ClO_2 is washed out with water to form a solution of ClO_2, and

(c) the Cl_2 remaining after ClO_2 has been washed out of the gaseous mixture is reacted in an HCl synthesis furnace with hydrogen cathodically-formed in a chlorate-electrolysis plant, along with externally produced Cl_2, to give hydrochloric acid and the hydrochloric acid is introduced into the cascade reactor,

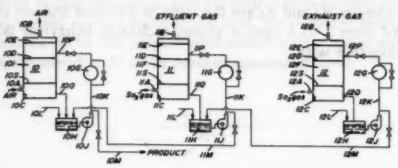
(d) the alkali metal chloride solution depleted of chlorate is withdrawn from the outlet of the reactor and introduced into the chlorate-electrolysis plant forming chlorate and hydrogen therefrom, the chlorate solution is then recycled

into the reactor and the hydrogen is introduced into the HCl-synthesis furnace.

4,543,244
USE OF HIGH SILICON CR NI STEEL IN H_2SO_4 MANUFACTURE

Frederick W. S. Jones, Campbellville, Canada, and Frank Smith, Widnes, England, assignors to C-I-L Inc., Montreal, Canada

Filed Jun. 9, 1983, Ser. No. 502,500
Claims priority, application Canada, Jun. 11, 1982, 404962
Int. Cl.[4] C01B *17/98, 17/74, 17/48;* **B01J** *1/20*
U.S. Cl. 423—522 **19 Claims**

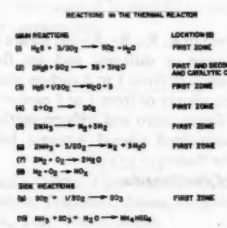


1. In a process for making sulfuric acid from sulfur dioxide and oxygen in a contact process system which employs at least some sulfuric acid stream having a concentration of 90–100% and temperatures of above 40° C., the improvement consisting of the use of a corrosion resistant wrought austenitic steel consisting of 17.5±0.5% Cr, 17.5±0.5% Ni, 4.6-5.8% Si, balance essentially Fe as the material of construction for the portion of the system in contact with said 90–100% sulfuric acid above 40° C. streams.

4,543,245
PROCESS FOR CONTROLLING TEMPERATURE OF A CLAUS SULFUR UNIT THERMAL REACTOR

Lee G. Peterman, Flossmoor, Ill., and Raymond J. Staebel, Houston, Tex., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 335,912, Dec. 30, 1981, Pat. No. 4,438,069. This application Mar. 20, 1984, Ser. No. 576,075
Int. Cl.[4] C01B *17/16*
U.S. Cl. 423—574 R **6 Claims**



1. A process for converting hydrogen sulfide into water and elemental sulfur comprising the steps of:

measuring the amount of hydrogen sulfide in a first hydrogen sulfide-containing stream;

measuring the amount of molecular oxygen in a molecular oxygen-containing stream;

introducing said first hydrogen sulfide-containing stream and said molecular oxygen-containing stream into a first reaction zone;

maintaining said first reaction zone at conditions sufficient to oxidize said hydrogen sulfide to form a first reaction product stream containing sulfur dioxide;

removing said first reaction product stream from said first reaction zone;

introducing said first reaction product stream and a second hydrogen sulfide-containing stream into a second reaction zone;

maintaining said second reaction zone at conditions sufficient to form a second reaction product stream containing water and elemental sulfur made from at least a portion of said second hydrogen sulfide-containing stream and said first reaction product stream;

comparing said first hydrogen sulfide measurement and said first molecular oxygen measurement;

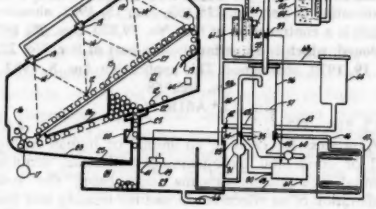
determining the temperature within said first reaction zone; and

varying the relative amount of hydrogen sulfide to molecular oxygen entering said first reaction zone in response to said temperature determination and said hydrogen sulfide-to-molecular oxygen comparison; whereby a temperature control strategy can be followed to maintain the temperature in said first reaction zone at a desired value.

4,543,246
HYDROGEN GENERATOR

Clifford F. Houser, Flint, Mich.

Filed Oct. 4, 1984, Ser. No. 657,508
Int. Cl.[4] C01B *13/00*
U.S. Cl. 423—648 R **12 Claims**



1. A gas generator for continuously producing a gas by the reaction of a solid and a liquid reactant. comprising, in combination:

a supply of balls made from a solid reactant material;

a reaction chamber;

means for conveying said balls from said supply through said reaction chamber and back to said supply;

spray means within said reaction chamber for directing a spray of liquid reactant on to said balls passing therethrough;

means for delivering said liquid reactant from a sump, through said spray means and into contact with said balls and back to said sump; and

means for delivering gas generated by the contact of said liquid reactant and said solid reactant balls from said reaction chamber.

10. The method of producing a gas by the exothermic reaction of a solid and liquid reactant wherein the solid reactant is in the form of balls, comprising the following steps, in combination:

causing the balls to move in a continuous flow path;

spraying the balls with said liquid reactant over a portion of said flow path;

removing the gas formed by the reaction of said liquid reactant with the solid reactant balls;

controlling the temperature by removing the excess heat generated from the exothermic reaction by heat exchange to said liquid reactant;

removing solid products of reaction formed by said reaction, at least in part, by filtration of said liquid reactant.

4,543,247

ECTOPARASITICIDE-CONTAINING COLLARS FOR PETS

Miklos von Bittera, Leverkusen; Manfred Federmann, Wuppertal; Ulrich von Gizycki, Leverkusen; Dietmar Schäpel, Cologne; Wilhelm Stendel, Wuppertal; Herbert Voege, Leverkusen, and Hubert Dorn, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 308,718, Oct. 5, 1981, abandoned. This application Jan. 6, 1983, Ser. No. 456,141

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039881

Int. Cl.[4] A01N *25/00, 25/34*

U.S. Cl. 424—14 **12 Claims**

1. An ectoparasiticide-containing polyurethane collar for animals, which comprises a hydrophobic polyurethane which cannot be swollen in water and which contains, relative to the polyurethane, 2 to 30% by weight of an ectoparasiticide, said ectoparasiticide selected from the group consisting of an insecticidally active carbamate having a vapor pressure of between about 10^{-4} and 10^{-6} mm Hg measured at 20° C., and an insecticidally active synthetic pyrethroid, and combinations thereof and, relative to the polyurethane, 8 to 25% by weight of a spreading agent, said speading agent selected from the group consisting of silicone oils, fatty acid esters, fatty alcohols, fatty acids and combinations thereof.

4,543,248

METHOD FOR IMMUNOREGULATION WITH 6-ARYL PYRIMIDINE COMPOUNDS

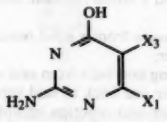
Dale A. Stringfellow, and Patricia E. Fast, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 225,159, Jan. 15, 1981, abandoned, which is a continuation of Ser. No. 79,850, Sep. 28, 1979, abandoned, which is a continuation-in-part of Ser. No. 22,205, Mar. 19, 1979, abandoned. This application Apr. 8, 1982, Ser. No. 366,758

Int. Cl.[4] A61K *31/505*

U.S. Cl. 514—272 **4 Claims**

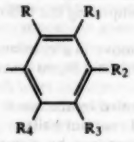
1. A process for treating an animal or human having acquired or congenital hypogammaglobulinemia, acquired or congenital agammaglobulinemia, comprising the systemic administration of an effective amount for treating said diseases of a compound of the formula:



wherein X_3 is equal to X, X_4, or X_5 wherein X_4 is fluoro, chloro, bromo or iodo, and X_5 is mono-, di- or trihalo methyl, mono-, di- or trifluoroethyl, perfluoropropyl and X is alkyl of from 1 to 3 carbon atoms, inclusive, 2-propynyl, 2-propenyl, and alkyloxyacyl where alkyl is as defined above, and X_1 is a member selected from the group consisting of:

(a) phenyl,

(b) a monosubstituted phenyl of the formula:



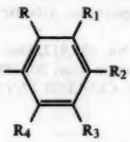
wherein provided that only one of groups R, R_1, R_2, R_3, R_4 is other than hydrogen and R or R_4 is alkyl of from 1 to 8 carbon atoms, inclusive, including isomeric forms, alkoxy of from 1 to 8 carbon atoms, inclusive, including isomeric forms, fluoro, chloro, bromo, iodo, or nitro; R_1 or R_3 is fluoro, chloro, bromo, iodo, nitro, trifluoromethyl or alkoxy of from one to eight carbon atoms, alkoxyethyloxy wherein alkoxy is from 1 to 5 carbon atoms, inclusive, or

wherein R_5 and R_6 are the same or different and are alkyl of from 1 to 8 carbon atoms, inclusive, benzyl or taken together with

are a saturated cycloalkylamino group

wherein n' is 3, 4, 5 or 6 or dialkyl substituted cycloalkylamino wherein each alkyl is from 1 to 3 carbon atoms, inclusive; and R_2 is chloro, fluoro, bromo, iodo, or alkyl of from 1 to 3 carbon atoms, inclusive.

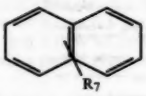
(c) a disubstituted phenyl of the formula:



wherein any two of R, R_1, R_2, R_3 and R_4 are not hydrogen and are the same or different and are fluoro, chloro, bromo, iodo, alkyl of from 1 to 8 carbon atoms, including isomeric forms, alkoxy of from 1 to 8 carbon atoms, inclusive isomeric forms, nitro and trifluoromethyl;

(d) a trihalo substituted phenyl wherein halo is chloro, bromo, iodo or fluoro,

(e) α-naphthyl of the formula:



wherein R is substituted in either ring and is hydrogen, alkyl of from 1 to 8 carbon atoms, inclusive, including isomeric forms, alkoxy of from 1 to 8 carbon atoms, inclusive, including isomeric forms, fluoro, chloro, iodo, bromo or nitro,

(f) 2-furyl,

(g) 3-pyridyl,

(h) 2-pyridyl and

(i) 2-pyrazyl,

or a salt thereof in association with a pharmaceutical carrier to said human or animal.

4,543,249

HAIR SPRAY COMPOSITIONS CONTAINING METHYLMETHACRYLATE-METHACRYLIC ACID COPOLYMERS

Elliot Nelson, Dobbs Ferry, N.Y., assignor to American Cyanamid Co., Stamford, Conn.

Continuation of Ser. No. 134,364, Mar. 27, 1980, abandoned, and a continuation-in-part of Ser. No. 9,882, Feb. 6, 1979, abandoned. This application Sep. 27, 1982, Ser. No. 424,699

Int. Cl.[4] A61K *7/06, 7/11*

U.S. Cl. 424—70 6 Claims

1. A non-aerosol hair spray composition consisting essentially of from about 1 to 10 percent by weight of a copolymer of 70 to 90 percent weight percent methylmethacrylate and 10 to 30 weight percent methacrylic acid, the carboxyl groups of which are 50 to 100 percent neutralized with a water-soluble base, dissolved in 65 to 99 percent aqueous ethanol.

4,543,250

TOILETRY FORMULATIONS COMPRISING LOW MOLECULAR WEIGHT CARRAGEENAN

Henry J. Witt, Rockport, Me., assignor to FMC Corporation, Philadelphia, Pa.

Filed Apr. 11, 1983, Ser. No. 483,970

Int. Cl.[4] A61K *7/06, 31/70, 35/78*

U.S. Cl. 424—70 19 Claims

1. A toiletry formulation for application to body skin which comprises a sulfated seaweed polysaccharide extractive of low molecular weight in combination with a conventional toiletry preparation selected from the group consisting of shampoos, shampoo after-treatment mediums, hair grooming aids, cleansing agents, emollient agents, healing agents and bath products, said extractive being characterized in that the water viscosity thereof in a 1.5%, by weight, water solution at 75 ° C. is not greater than about 5 mPa.s., said extractive being present in an amount effective to have substantivity with the skin keratin and to provide for conditioning of such skin by its moisture-binding capacity.

4. A toiletry formulation as defined in claim 1 wherein said extractive is a carrageenan.

4,543,251

GEL PREPARATIONS FOR EXTERNAL APPLICATION

Takuzo Kamishita, Takatsuki, Japan, assignor to Toko Yakuhin Industry Co., Ltd., Osaka, Japan

Filed Dec. 9, 1983, Ser. No. 559,730

Int. Cl.[4] A61K *31/19, 31/60, 31/61, 33/78*

U.S. Cl. 424—81 7 Claims

1. A gel preparation for external application comprising diclofenac sodium as the active ingredient and present in amount of 0.3 to 3.0% by weight; a medium comprising water, a lower alkanol selected from the group consisting of methanol, ethanol, iso-propanol, butanol; and a glycol selected from the group consisting of ethylene glycol, propylene glycol and 1,3-butylene glycol, the medium being present in an amount at least sufficient to dissolve the active ingredient, the ratio of water to the combination of the lower alkanol and glycol being from about 8:2 to 4:6; a carboxyvinyl polymer selected from the group consisting of the hydrophilic polymers obtained by polymerization of acrylic acid, and present in an amount sufficient to gel the preparation; and an aliphatic amine, present in an amount sufficient to adjust the pH to about 6–8.

4,543,252

CATIONIC OLIGOPEPTIDES HAVING MICROBICIDAL ACTIVITY

Robert I. Lehrer, Santa Monica, and Michael E. Selsted, Los Angeles, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 341,394, Jan. 21, 1982, abandoned. This application Nov. 19, 1982, Ser. No. 443,087

Int. Cl.[4] C07C *103/52;* A61K *37/00;* C12P *21/00, 21/02*

U.S. Cl. 514—12 2 Claims

1. A method for inhibiting microbial growth in an environment susceptible to said microbial growth, said method comprising:

administering to said environment a microbial growth inhibiting amount of a cationic oligopeptide of the formula:

val—val—cys—ala—cys—arg—arg—ala—leu—cys—leu—

—pro—arg—glu—arg—arg—ala—gly—phe—cys—arg—ile—

—arg—gly—arg—ile—his—pro—leu—cys—cys—arg—arg.

4,543,253

SOLIDIFIED PHARMACEUTICAL COMPOSITION COMPRISING CELL WALL SKELETON

Yuichi Yamamura, 1-9-22, Nikawatakadai, Takarazuka; Ichiro Azuma, 1-2, Aoyamadai, Suita; Katsusuke Ennyu, 2-27, Beshoshinmachi, Takatsuki, and Osamu Aoki, 2-3-5-302, Hibarigaoka, Takarazuka, all of Japan

Filed Aug. 2, 1978, Ser. No. 930,409

Claims priority, application Japan, Aug. 9, 1977, 52-95871

Int. Cl.[4] H61K *35/78, 35/66*

U.S. Cl. 514—21 8 Claims

1. A stable, storable pharmaceutical composition, which comprises a dehydrated solid mixture of *Nocardia rubra* cell wall skeleton, vehicle oil comprising squalene or liquid petrolatum, suspending agent, and dispersing agent comprising mannitol, sorbitol or glucose; wherein said cell wall skeleton has anti-tumor activity; wherein said cell wall skeleton is present in an amount effective to exhibit anti-tumor activity; wherein said vehicle oil is present in an amount less than 8 mg and effective to stimulate the anti-tumor activity of said cell wall skeleton; wherein said suspending agent is present in an amount less than 1 mg and effective for the preparation of an aqueous suspension of said cell wall skeleton and said vehicle oil; and wherein said dispersing agent is present in an amount less than 56 mg and effective to render an aqueous suspension of said cell wall skeleton, said vehicle oil and said suspending agent isotonic.

4,543,254

ANTIPHLOGISTIC/ANTIPYRETIC/ANALGESIC AGENTS CONTAINING THEOBROMINE OR THEOPHYLLINE DERIVATIVES AS ACTIVE INGREDIENT

Takeru Kaneko, Hotogaya; Satoru Ozaki, Hoya; Kimie Takizawa, Narashono, and Hachiro Sugimoto, Ushiku, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

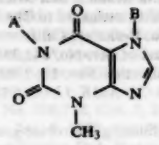
Filed Mar. 2, 1983, Ser. No. 471,564

Claims priority, application Japan, Mar. 2, 1982, 57-31684; Mar. 2, 1982, 57-31685

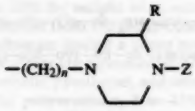
Int. Cl.[4] A61K *31/33, 31/52, 31/495*

U.S. Cl. 514—253 24 Claims

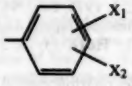
1. A method for treating a subject suffering from at least one of the symptoms of pain, fever, and tissue and/or bone and joint inflammation, which comprises administering to the subject a pharmaceutical composition which comprises a therapeutically effective amount of a compound of the general formula:



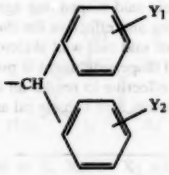
wherein one of A and B is —CH_3 and the other of A and B is



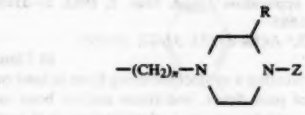
wherein R is a hydrogen atom or a lower alkyl group, Z is selected from the group consisting of (1) a group of the formula



wherein X_1 and X_2 are the same or different and each represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, a trifluoromethyl group or a halogen atom; (2) a pyridyl group and (3) a group of the formula:



wherein Y_1 and Y_2 are the same or different and Y_1 and Y_2 are selected from the group consisting of a hydrogen atom, a lower alkyl group, a lower alkoxy group, a trifluoromethyl group and a halogen atom, and n is an integer of from 2 to 10, with the proviso that when A is



Z is not pyridyl, and acid addition salts thereof, for analgesic, antiphlogistic, and antipyretic purposes, in combination with a pharmaceutically effective carrier.

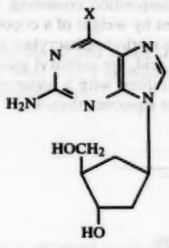
4,543,255

CARBOCYCLIC ANALOGS OF PURINE 2'-DEOXYRIBOFURANOSIDES

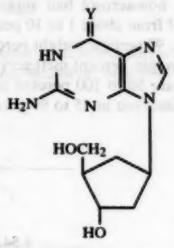
Y. Fulmer Shealy, and C. Allen O'Dell, both of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Filed May 10, 1984, Ser. No. 608,707
Int. Cl.[4] A61K *31/495, 31/52;* **C07D** *239/00*
U.S. Cl. 514—258 **17 Claims**

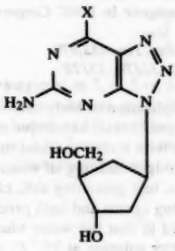
1. A compound having one of the following formulas



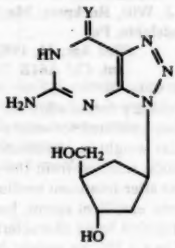
Formula V



Formula VI



Formula VII



Formula VIII

wherein X is halogen, an amino group, an alkylamino group, an alkoxy group, or an akylthio group, and Y is oxygen or sulfur.

4,543,256

(—)-10,11L METHYLENEDIOXY-N-N-PROPYLNORAPORPHINE AND METHODS EMPLOYING IT FOR INHIBITING THE EFFECTS OF EPILEPTIC SEIZURES AND FOR PREVENTION AND TREATMENT OF DUODENAL ULCERS

John L. Neumeyer, Wayland, Mass., assignor to Northeastern University, Boston, Mass.

Continuation-in-part of Ser. No. 358,918, Mar. 17, 1982, abandoned, and a continuation-in-part of Ser. No. 358,917, Mar. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 346,841, Feb. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 274,772, Jun. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 148,179, May 8, 1980, abandoned. This application May 18, 1982, Ser. No. 379,557
Int. Cl.[4] A61K *31/485;* **C07D** *221/18, 491/06*
U.S. Cl. 514—280 **4 Claims**

1. (—) 10, 11-Methylenedioxy-N-n-propylnoraporphine and pharmaceutically acceptable acid addition salts thereof.

2. A method for inhibiting the effects of an epileptic seizure by administering orally a therapeutically effective amount of a compound of the formula shown in claim 1.

3. A method for prevention and treatment of a duodenal ulcer comprising administering a therapeutically effective amount of the compound of claim 1.

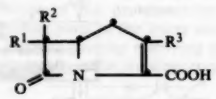
4,543,257

1-CARBA-2-PENEM-3-CARBOXYLIC ACID

Lovji D. Cama, Edison, and Burton G. Christensen, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 843,171, Oct. 19, 1977, abandoned, which is a continuation-in-part of Ser. No. 743,363, Nov. 19, 1976, abandoned. This application Jan. 4, 1980, Ser. No. 109,737
The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.
Int. Cl.[4] C07D *487/04;* A61K *31/40*
U.S. Cl. 514—210 41 Claims

1. A compound having the structural formula:



and the pharmaceutically acceptable salts thereof wherein R^1, R^2 and R^3 are independently selected from the group consisting of: hydrogen, mono-substituted and unsubstituted: alkyl having from 1 to 10 carbon atoms, alkenyl and akynyl having from 2 to 10 carbon atoms, cycloalkyl, cycloalkylalkyl, cycloalkylalkenyl and cycloalkenylalkyl wherein the preceding cycloalkyl or cycloalkenyl moieties comprise 3 to 6 carbon atoms and the alkyl or alkenyl moieties comprise 1 to 6 carbon atoms, phenyl, phenylalkyl, phenylalkenyl and phenylalkynyl having 1–6 carbon atoms in the chain; and wherein the substituent relative to the above-listed groups is selected from the group consisting of amino, hydroxyl, mercapto, alkylthio having from 1 to 6 carbon atoms, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano, and carboxyl; with the proviso that when one of R^1 or R^2 is hydrogen and the other is 1-hydroxyethyl, then R^3 is not hydrogen.

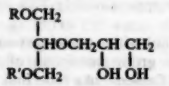
4,543,258

POLYOL ETHER COMPOUND, PREPARATION PROCESS THEREOF, AND COSMETIC COMPOSITION CONTAINING SAME

Koichi Urata; Naotake Takaishi; Yoshiaki Inamoto, all of Utsunomiya, and Yuji Suzuki, Tokyo, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 1, 1983, Ser. No. 547,623
Claims priority, application Japan, Nov. 16, 1982, 57-200587
Int. Cl.[4] A01N *25/00*
U.S. Cl. 514—772 15 Claims

1. A polyol ether compound represented by the general formula (I):



(I)

in which R represents a saturated or unsaturated, straight-chain or branched aliphatic hydrocarbon group having 8 to 24 carbon atoms, and R' represents a saturated or unsaturated, straight-chain or branched hydrocarbon group having 1 to 24 carbon atoms.

4,543,259

SUBSTANCE TH69E AND IMMUNOPOTENTIATOR CONTAINING THE SAME

Fumihiko Hoshino; Takahiro Yamaguchi; Nobuyuki Abe, all of Sendai; Nobuyuki Watabe, Izumi; Yoshiteru Katzukura; Tadahiko Hoshino, both of Sendai; Yoko Utsumi, Izumi, and Yoko Kuroda, Sendai, all of Japan, assignors to Teru Hoshino, Sendai, Japan

Continuation-in-part of Ser. No. 162,201, Jun. 23, 1980, abandoned. This application Feb. 24, 1982, Ser. No. 352,068
Claims priority, application Japan, Oct. 25, 1979, 54-138190
Int. Cl.[4] A61K *35/74;* C12P *1/04*
U.S. Cl. 424—116 6 Claims

1. A substance TH69E having the characteristics:
(a) elemental analysis: C:24.25%, H: 4.46% and N:6.55%
(b) molecular weight: about 60,000 ±15,000 (Biogel P-Series Column);
(c) color: white amorphous powder;
(d) decomposition point: 80° C. (as determined by a capillary method with use of Silicone Oil WF-30—the color changes to brown);
(e) ultraviolet absorption spectrum: as shown in FIG. 1 of the drawings;
(f) infrared absorption spectrum: as shown in FIG. 2 of the drawings;
(g) pH: 6.7 to 7.1 in an aqueous solution;
(h) solubility: soluble in water, and insoluble in ethanol, acetone, n-hexane, n-butanol and phenol; and
(i) color reactions: phenol-sulfuric acid reaction, anthrone reaction, Molisch reaction, orcinol-hydrochloric acid reaction, Ninhydrin reaction being positive, and Elson-Morgan's reaction being negative,

prepared by a process, comprising:
(a) culturing a strain of *Streptococcus faecalis* having the identifying depository number of ATCC-31663 in a nutrient medium until a sufficient amount of the substance is obtained;
(b) extracting said bacterial strain obtained from the nutrient medium with hot water;
(c) treating the aqueous solution at least once with water saturated with a phenolic compound; and
(d) precipitating said TH69E from said treated aqueous solution.

4,543,260

PROCESS FOR CURING BACON, PRODUCT THEREOF AND COMPOSITION THEREFOR

Eugene Brotsky, Pittsburgh, Pa., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 433,302, Oct. 7, 1982, abandoned, which is a continuation-in-part of Ser. No. 340,548, Jan. 18, 1982, abandoned, which is a continuation of Ser. No. 220,582, Dec. 29, 1980, abandoned, which is a continuation of Ser. No. 88,713, Oct. 26, 1979, abandoned. This application Jan. 26, 1984, Ser. No. 574,197
Int. Cl.[4] A23B *4/02;* A23L *1/31*
U.S. Cl. 426—266 13 Claims

1. A method for preparing cured bacon from pork bellies comprising contacting said pork bellies with a stable curing solution comprising an alkali metal chloride, a soluble nitric oxide forming compound, a color enhancing agent selected from the group consisting of ascorbic acid, erythorbic acid and salts thereof and mixtures thereof and a member selected from the group consisting of (A) from about 93% to about 97% of an alkali metal hexametaphosphate and from about 7% to about 3% of a carbonate alkalizing agent and (B) from about 75% to about 85% of an alkali metal hexametaphosphate, and from about 7% to about 13% alkali metal acid pyrophosphate and from about 7% to about 13% carbonate alkalizing agent, the percentages in (A) or (B) totaling substantially 100% based on the weight of the components in subsections (A) or (B), the pH of the bellies after contact being about equivalent to the natural pH of the bellies.

4,543,261

SEPARATING WHEY COMPONENTS INTO HIGH PURITY PRODUCTS BY ION EXCHANGE

Zits T. K. Harmon, and Frederick J. Dechow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 2, 1984, Ser. No. 585,700
Int. Cl.[4] A23C *9/146*; C12H *1/04*
U.S. Cl. 426—271 7 Claims

1. A process for separating the components of an aqueous fluid containing suspended insoluble organic material, soluble proteins, enzymes, salts and low molecular weight nonionic organic compounds, said process comprising the steps of

(a) removing the insoluble organic material from said fluid without removing the soluble proteins, enzymes, salts or nonionic organic compounds therefrom, then

(b) passing the fluid through a bed of a macroporous weakly basic anion exchange resin under conditions such that at least a major portion of said soluble proteins and enzymes are removed therefrom, then

(c) passing said liquid through a bed of a gel-type strongly acidic cation exchange resin which resin is in the form of spheroidal beads having a particle size distribution such that at least 80 volume percent of said beads have a particle diameter from about 0.9 to about 1.1 times the volume average particle diameter of said beads, and then

(d) recovering a fraction of the eluate containing a major portion of said salt separate from that fraction of the major portion of said nonionic organic compound which eluant has passed through the bed of said gel-type cation exchange resin.

4,543,262

PROCESS FOR MAKING A NUTRITIONAL BAR

Jane E. Michnowski, Little Ferry, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Mar. 30, 1983, Ser. No. 480,438
Int. Cl.[4] A23G *3/00*
U.S. Cl. 426—306 14 Claims

1. A method of making a nutritional snack comprising:

(a) mixing liquid ingredients including corn syrup, and melted confectioner's coating material which is solid at room temperature;

(b) admixing minor dry ingredients including vitamins and minerals with the liquid ingredients;

(c) admixing major dry ingredients comprising at least one high protein content source and at least one high carbohydrate content source with with liquid ingredients and minor dry ingredients to obtain a substantially homogeneous mixture;

(d) extruding at room temperature the substantially homogeneous mixture of step (c) such that said confectioner's coating material is substantially, uniformly distributed throughout said snack, said extruding being in an extruder having opposing rollers; and

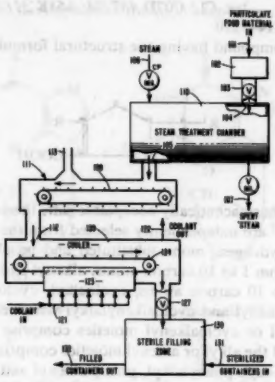
(e) cutting the extrudate of step (d) into pieces, the total water content of the liquid ingredients, minor dry ingredients and major dry ingredients being less than or equal to about 10% water by weight and the amount of melted confectioner's coating material being sufficient to provide shape integrity to said extrudate, said nutritional snack having a caloric distribution of at least about 10% from proteins, at least about 45% from carbohydrates including sucrose, and from at least about 25% to about 35% from fats, said percentages totaling 100%, and said nutritional snack having a chewy texture.

4,543,263

HEATING AND COOLING FOODS AT HIGH PRESSURE IN A CONTINUOUS STERILIZATION SYSTEM

Stephen L. Goldhahn, Stratford, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Jun. 7, 1983, Ser. No. 501,820
Int. Cl.[4] A23L *3/16*
U.S. Cl. 426—520 8 Claims



1. A method for continuously heating and cooling particulate food material comprising:

(a) heat treating particulate food material in a super-atmospheric steam treatment chamber and discharging hot food material therefrom through a first valveless opening into a substantially pressure-tight, gas-filled chamber;

(b) conveying said hot food material through said substantially pressure-tight, gas-filled chamber and discharging said food material therefrom through a second valveless opening into a super-atmospheric pressure cooler;

(c) flowing a super-atmospheric pressure sterile gas coolant into said cooler for direct contact cooling of said hot food material;

(d) discharging cooled food material from said cooler through a pressure-tight outlet opening to a lower pressure zone; and

(e) controllably venting gas from the substantially pressure-tight, gas-filled chamber so as to prevent steam from flowing into the cooler and coolant gas from flowing into the steam treatment chamber.

4,543,264

METHOD OF TREATING OILSEED MATERIAL

Nancy G. Stahel, Minneapolis, Minn., assignor to Land O'-Lakes, Inc., Arden Hills, Minn.

Continuation-in-part of Ser. No. 410,351, Aug. 23, 1982, Pat. No. 4,450,176. This application May 21, 1984, Ser. No. 612,074
Int. Cl.[4] A23L *1/20*
U.S. Cl. 426—629 10 Claims

1. A process for treating a particulate full-fat oilseed, the oilseed material having at least approximately 10% fat content by weight and at least approximately 20% protein content by weight, comprising:

mixing a lower alcohol with a proteinaceous oilseed material selected from the group consisting of rapeseed, cottonseed, peanuts and flaxseed, in a ratio that is at least approximately 9 pounds of alcohol to 60 pounds of oilseed material in a closed vessel such that the proteinaceous oilseed material/alcohol mixture is fluidized;

introducing steam directly to the proteinaceous oilseed material/alcohol mixture to heat the material to a treatment temperature to a maximum of approximately 280° F.

thereby vaporizing the alcohol such that the alcohol is placed in intimate contact with the oilseed material under superatmospheric pressure;

stopping the steam flow to the proteinaceous oilseed material/alcohol mixture after the treatment temperature has been reached;

holding the oilseed material/alcohol in a temperature range of approximately 190° F. to 280° F. without further introduction of steam in direct contact with the oilseed material and until the oilseed material reaches a PDI of approximately less than 10; and

venting the lower alcohol vapors from the enclosed vessel only after the oilseed material has reached a PDI of approximately 10 to subatmospheric pressure while holding the temperature of the proteinaceous oilseed material above the boiling point of the lower alcohol at the subatmospheric pressure thereby removing substantially all of the lower alcohol from the proteinaceous oilseed material.

4,543,265

METHOD FOR PRODUCTION OF A CATHODE FOR USE IN ELECTROLYSIS

Kazuki Kasuya, Chiba, Japan, assignor to Chlorine Engineers Corp. Ltd.

Division of Ser. No. 008,812, Feb. 2, 1979, Pat. No. 4,465,580. This application Feb. 29, 1984, Ser. No. 584,963

Claims priority, application Japan, Feb. 20, 1978, 53-17689

Int. Cl.⁴ B05D *1/08;* **C25D** *11/00*

U.S. Cl. 427—34 **3 Claims**

1. A method for producing a cathode for use in electrolysis, which comprises forming a coating of Ni and fine particles of a cathode activating material comprising at least one platinum-group metal oxide selected from the group consisting of Pt, Ru, Ir, Rh, Pd and Os oxides, on a corrosion-resistant electrically conductive substrate.

4,543,266

METHOD OF FABRICATING A MEMBRANE STRUCTURE

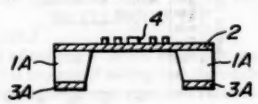
Seitaro Matsuo, Isehara; Mikiho Kiuchi, Zama, and Misao Sekimoto, Yokohama, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Continuation of Ser. No. 530,082, Sep. 7, 1983, abandoned. This application Oct. 15, 1984, Ser. No. 660,551

Claims priority, application Japan, Sep. 10, 1982, 57-156844

Int. Cl.⁴ B05D *5/12*

U.S. Cl. 427—38 **12 Claims**



1. A process for fabricating a membrane structure having a predetermined internal stress, comprising the steps of

(a) providing a substrate having first and second surfaces;

(b) forming by plasma deposition over the first surface of said substrate a thin film selected from the group consisting essentially of silicon nitride, boron nitride and silicon carbide, said plasma deposition utilizing microwave electron cyclotron resonance generated by microwave power within the range 150 to 250 watts, the temperature of said substrate after deposition reaching a value determined primarily by the heat generated by said plasma deposition;

(c) heating said substrate, after deposition of said thin film on the first surface thereof, to a temperature in the range 300°–800° C., said temperature being higher than the temperature of said substrate after plasma deposition of said thin film and dependent upon the value of said microwave power within said range of 150 to 250 watts; and

(d) removing a portion of said substrate to provide a frame supporting said thin film, whereby a membrane structure is formed having an internal stress in the range 0.5×10^9 to 3×10^9 dyne/cm^2, the amount of said stress being determined by the temperature to which said substrate was heated in step (c) after deposition of said thin film.

4,543,267

METHOD OF MAKING A NON-SINGLE-CRYSTALLINE SEMI-CONDUCTOR LAYER ON A SUBSTRATE

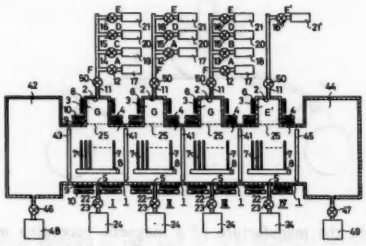
Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Division of Ser. No. 377,314, May 12, 1982, Pat. No. 4,492,716, which is a division of Ser. No. 177,889, Aug. 14, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 429,255

Claims priority, application Japan, Aug. 16, 1979, 54-104452

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—39 **6 Claims**



1. A multi-layer semiconductor manufacturing method which employs a plurality n of sequentially arranged, adjacent reaction chambers $C_1, C_2 \ldots C_n$, a plurality $(n-1)$ of normally closed shutter means $G_{12}, G_{23} \ldots G_{(n-1)n}$ separating the reaction chamber C_1 and C_2, C_2 and $C_3 \ldots C_{(n-1)}$ and C_n, respectively, an inserting chamber C_0 adjacent the reaction chamber C_1 and separated therefrom by a shutter means G_{01} and a taking-out chamber C_{n+1} adjacent the reaction chamber C_n and separated therefrom by a shutter means $G_{n(n+1)}$, the reaction chambers C_1 to C_n being each provided with a gas inlet and a gas outlet, the inserting chamber C_0 and the taking-out chamber C_{n+1} being each provided with another gas outlet, the inserting chamber C_0 and the reaction chamber C_1, $C_2 \ldots C_n$ having positioned therein $(n+1)$ substrates B_{n+1}, $B_n \ldots B_2$, B_1 respectively, the method comprising the steps of:

depositing n semiconductors on the substrates B_n, $B_{n-1} \ldots B_1$ to form thereon n semiconductor layers $L_1, L_2 \ldots L_n$, respectively, by introducing at least n semiconductor compound gases into the reaction chambers $C_1, C_2 \ldots C_n$ through the gas inlets thereof in such a state that gases in the reaction chambers $C_1, C_2 \ldots C_n$ are exhausted therefrom through the gas outlets thereof and by applying n ionizing electromagnetic fields to the semiconductor compound gases to ionize them into semiconductor compound gas plasmas while at the same time passing semiconductor compound gas plasmas into the reaction chambers $C_1, C_2 \ldots C_n$ by discharging therefrom the gases, respectively;

displacing the shutter means $G_{01}, G_{12}, G_{23} \ldots G_{(n-1)n}$, $G_{n(n+1)}$ and moving the substrates $B_{n+1}, B_n \ldots B_2, B_1$ from the inserting chamber C_0 and the reaction chambers $C_1, C_2 \ldots C_n$ to the reaction chambers $C_1, C_2 \ldots C_n$ and taking out chamber C_{n+1}, respectively, while at the same time evacuating entirely the inserting chamber C_0, the reaction chamber C_1 to C_n and the taking-out chamber C_{n+1} or passing therethrough only carrier gases and then closing the shutter means $G_{01}, G_{12} \ldots G_{n(n+1)}$; and

positioning a substrate B_{n+2} in the inserting chamber C_0 while at the same time taking out the substrate B_1 from the taking-out chamber C_{n+1}, whereby to fabricate the multi-

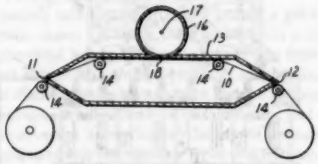
layer semiconductor having the n semiconductor layers L_1, L_2 . . . L_n sequentially laminated in this order.

4,543,268

ELECTRON-BEAM ADHESION-PROMOTING TREATMENT OF POLYESTER FILM BASE FOR MAGNETIC RECORDING MEDIA

LuAnn Sidney, White Bear Township, Ramsey County, and Stephen R. Ebner, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 5, 1984, Ser. No. 628,154
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—44 **15 Claims**



1. In the manufacture of a magnetic recording medium comprising a flexible polyester film base and a thin magnetizable layer, a method for promoting the adhesion to the polyester film base of the magnetizable layer, which method comprises the steps of (1) continuously passing uncoated polyester film base through an inert atmosphere containing no more than 100 ppm oxygen while (2) exposing the film base to irradiation by an electron beam to subject the film base to an absorbed dosage of at least 2 Mrad and (3) applying a thin magnetizable layer containing an organic binder to a surface of the film base to which adhesion of the layer has been enhanced by virtue of steps (1) and (2).

4,543,269

PROCESS FOR PRODUCING SUPPORTS FOR PHOTOGRAPHIC PAPER

Masataka Kiritani; Yasuzi Asao, and Takashi Takayanagi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Jul. 11, 1984, Ser. No. 629,867
Claims priority, application Japan, Jul. 11, 1983, 58-125646
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—44 **7 Claims**

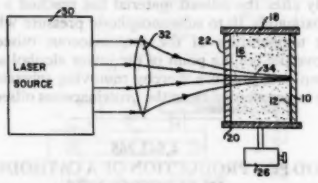
1. A process for producing supports for a photographic paper which comprises applying a layer of a composition containing an unsaturated organic compound capable of being polymerized or hardened upon irradiation with electron beams and an inorganic white pigment to a support, irradiating the layer with a first irradiation with electron beams from the coated side prior to contacting with the surface of a roll to incompletely harden the unsaturated organic compound, pressing the incompletely hardened layer against the surface of a roll to transfer the surface configuration of the roll to the layer, and then after removal from the roll, further irradiating the layer with a second irradiation with electron beams from the coated side to more fully harden unsaturated organic compound in the layer.

4,543,270

METHOD FOR DEPOSITING A MICRON-SIZE METALLIC FILM ON A TRANSPARENT SUBSTRATE UTILIZING A VISIBLE LASER

Modest M. Oprysko, Roselle, and Mark W. Beranek, Arlington Heights, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 20, 1984, Ser. No. 622,366
Int. Cl.⁴ C23C *11/02*
U.S. Cl. 427—53.1 **8 Claims**



1. The method of reproducibily depositing a micron sized film of metal on a transparent surface in a closely controlled location and area comprising the steps of:

covering said surface with a metal bearing gaseous compound,

forming a nucleation layer of scattered parts of metal on said surface over the general area on which said film is to be deposited,

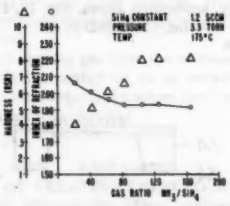
and focusing a visible laser beam on the point of said surface to have the film so as to heat that point beyond the temperature required to thermally decompose said compound and deposit a film on that point.

4,543,271

SILICON OXYNITRIDE MATERIAL AND PHOTOCHEMICAL PROCESS FOR FORMING SAME

John W. Peters, Malibu, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jul. 2, 1984, Ser. No. 627,366
Int. Cl.⁴ B05D *3/14*
U.S. Cl. 427—54.1 **8 Claims**



1. A photochemical vapor deposition process for depositing on the surface of a selected substrate a homogeneously chemically bonded silicon oxynitride material which contains minimal free amorphous silicon, comprising the steps of:

(a) providing said substrate in a photochemical vapor deposition chamber;

(b) forming a vapor phase mixture comprising:

(i) a nitrogen-containing compound and a silicon-containing compound capable of undergoing a photochemical reaction with each other in the presence of radiation of a selected wavelength in a ratio and at flow rates to form a silicon nitride material;

(ii) mercury-vapors as a sensitizer for said photochemical reaction; and

(iii) an oxygen-containing compound;

(c) exposing said substrate to said vapor phase mixture and simultaneously introducing into said chamber said radiation of a selected wavelength sufficient to induce said

photochemical reaction between said nitrogen-containing compound, said silicon-containing compound, and said oxygen-containing compound to form said homogeneously chemically bonded silicon oxynitride material which deposits on said surface of said substrate, wherein said oxygen-containing compound is present in an amount to react with any excess said silicon-containing compound to chemically bond and homogeneously incorporate silicon from said excess silicon-containing compound into said silicon oxynitride material and thereby prevent the formation of said free amorphous silicon from said silicon-containing compound and the heterogeneous incorporation of said free amorphous silicon into said silicon oxynitride material.

4,543,272

INSULATION PROCESS BY IMPREGNATION OF ELECTRIC LEADS

Alain Anton, Chaponnay, France, assignor to Alsthom-Atlantique, S.A., Paris Cedex, France

Filed Jul. 27, 1984, Ser. No. 635,094
Claims priority, application France, Aug. 3, 1983, 83 12807
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—58 **5 Claims**

1. Insulation process by impregnation of electric leads using isocyanate and oxazolidone cycle resins in which a glass cloth and porous mica paper tape is wound around the leads, the tape is impregnated with a quaternary ammonium salt, catalyzing condensation of isocyanate and epoxy derivatives in isocyanurate and oxazolidone cycles and with a varnish comprising a liquid epoxy resin and an isocyanate derivative, then the impregnated tape undergoes a heat treatment for polymerization of the varnish, characterized by use, as quaternary ammonium salt, of a benzyltrialkylammonium halide with alkyl chain containing at most 3 carbon atoms, the tape is first impregnated with benzyltrialkylammonium halide and liquid epoxy resin, it is dried at a temperature equal to 135° C. at maximum and then it is impregnated with isocyanate derivative based varnish before undergoing the polymerizing heat treatment.

4,543,273

CARBON MONOXIDE SENSING ELEMENT AND METHOD OF MAKING SAME

Takashi Handa, Kamakura, and Yoshiaki Okayama, Yamato, both of Japan, assignors to Nohmi Bosai Kogyo Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 563,928
Claims priority, application Japan, Dec. 25, 1982, 57-226510
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—126.3 **3 Claims**

1. A method of making a carbon monoxide sensing element comprising a first process of adding and thoroughly dispersing an aqueous chloroplatinic acid solution to stannic oxide in the range of Pt/Sn=2–10 mol % whereupon the mixture is quick frozen and dried in a vacuum, a second process of adding and mixing antimony oxychloride to the product made in the first process in the range of Sb/Sn=2–8 mol %, a third process of adding an organic solvent to the product made in the second process and applying and drying the resulting paste on an insulator to which electrodes are attached and a fourth process of calcining the element made in the third process in an air atmosphere at 600° to 850° C.

4,543,274

POWDER SPRAY GUN AND POWDER SPRAY METHOD

Douglas C. Mulder, Wellington, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Jun. 21, 1984, Ser. No. 623,005
Int. Cl.[4] B05B *1/08*
U.S. Cl. 427—197 **13 Claims**

1. A method of spraying solid particulate powder from a powder spray gun, which gun includes a barrel and a nozzle at the discharge end of said barrel, which barrel has a central axis, which method comprises

transporting said solid particulate powder to said barrel of said gun while entrained in an air stream,

passing said air entrained powder through an air flow amplifier wherein said air entrained powder is impacted by a high velocity air stream directed generally parallel to the axis of said barrel and

drawing ambient air into said air flow amplifier upstream of the point of impaction of said high velocity air stream with said air entrained powder material so as to increase the volume of air within which said powder material is entrained in the course of passage through said barrel,

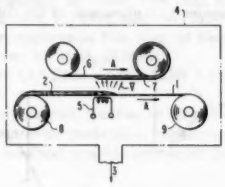
passage of said air entrained powder through said air flow amplifier being operable to increase the velocity of said solid particulate material.

4,543,275

METHOD OF FORMING THIN VAPOR DEPOSITED FILM OF ORGANIC MATERIAL

Goro Akashi; Akira Nahara, and Yoshihiro Arai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 349,408, Feb. 16, 1982, abandoned. This application Sep. 16, 1983, Ser. No. 532,817
Claims priority, application Japan, Feb. 16, 1981, 56-21651
Int. Cl.[4] C23C *11/00, 13/00*
U.S. Cl. 427—250 **6 Claims**



1. A process for forming a vapor-deposited organic thin film, comprising the steps of:

continuously supplying fresh organic evaporation source material to a vapor-deposition zone by continuously transporting a fresh segment of a support base made of a heat resisting material and having an organic evaporation source material on a surface thereof through a vapor-deposition zone within an evaporation chamber;

providing a second support base material within said evaporation chamber;

providing a heating means with said evaporation chamber, in the vicinity of said support base having said organic evaporation source material thereon;

heating said organic evaporation source material with said heating means to a temperature such that said organic evaporation source material forms a vapor; and vapor depositing said vapor on said second support base.

6. A process for forming a vapor-deposited organic thin film as claimed in claim 1, wherein said second support base is further comprised of a thin metal film vapor deposited thereon.

4,543,276

THERMOSETTING POLYURETHANE COMPOSITIONS

Girish G. Parekh, Fairfield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 479,530, Mar. 28, 1983, Pat. No. 4,485,222. This application Sep. 10, 1982, Ser. No. 648,442

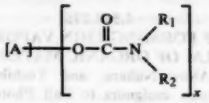
Int. Cl.⁴ B05D *3/02*

U.S. Cl. 427—388.3 **4 Claims**

1. A polyurethane coating formed on a substrate by curing thereon a thermosetting polyurethane composition comprising:

(a) a polymer having molecular weight of from 500 to 20,000 and containing from about 0.3 to about 15 percent by weight based on total weight of said polymer, of one or more free functional groups selected from —OH, COOH, —$CONH_2$ and

(b) a mixture of monomeric and oligomeric polyfunctional substituted urethane compounds, selected from the groups consisting of: (i) monomeric compounds of the formula:



wherein

A is a di- to hexavalent organic moiety;

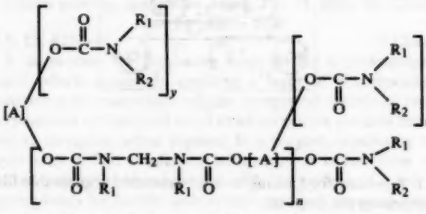
X is an integer from 2 to 6;

R_1 is hydrogen, —CH_2OH or —CH_2OR_3;

R_2 is —CH_2OH or —CH_2OR_3; and

R_3 is C_1 to C_4 alkyl,

and (ii) oligomeric compounds of the formula



wherein:

A, R_1 and R_2 are as defined in (i)

n is an integer from 1 to 5

w is an integer from 2 to 4

Y is an integer from 1 to 5.

4,543,277

METHOD AND APPARATUS FOR COATING PLASTICS BOTTLES

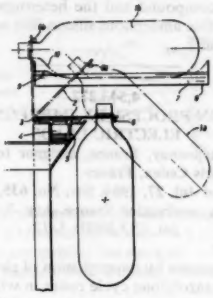
Brian Giles, Manchester, England, assignor to GOM International Ltd., Gibralter, England

Filed Nov. 23, 1983, Ser. No. 554,560

Claims priority, application United Kingdom, Dec. 3, 1982, 8234483

Int. Cl.⁴ B05D *1/18*

U.S. Cl. 427—430.1 **8 Claims**



1. A method of coating a plastic bottle having a neck defining an aperture, said method comprising the steps of: supporting the bottle by the bottle neck; rotating the bottle about a horizontal axis; passing the horizontally rotating bottle across the upper surface of a bath of liquid coating material such that the bottle skims the surface of the bath of coating material and contact between the bottle and the bath only occurs while the bottle is rotated about a horizontal axis; removing the bottle from contact with the surface of the bath; and, solidifying the coating material on the surface of the bottle while continuing to rotate the bottle.

4,543,278

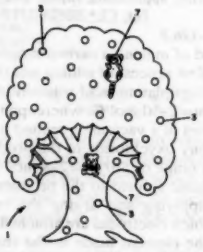
TOY DISPLAY WALL HANGING

Gordon K. Ackerman, 101 Prospect St., Little Falls, N.Y. 13365

Filed Aug. 6, 1984, Ser. No. 638,261

Int. Cl.⁴ A41G *1/00;* **B44C** *5/04*

U.S. Cl. 428—18 **1 Claim**



1. In combination, a toy display wall hanging and toys such as animals and dolls removably and releasably stored neatly on said wall hanging, said wall hanging being a flat sheet of MASONITE material for disposition and mounting in coplanar relationship on a wall of a child's room, said wall hanging being in the configuration of a pleasing object such as a tree, said object being screen-printed in a variety of colors corresponding to the colors of the tree trunk, branches and leaves, said object fixedly carrying hook portions of VELCRO patches, said toys having back surfaces, said back surfaces

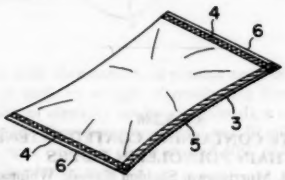
carrying in fixed relationship therewith loop portions of VELCRO patches corresponding in size with said hook portions, said hook portions of the said VELCRO patches carried by said tree having characteristics for engaging said loop portions of said VELCRO patches carried by said back surfaces of said toys to thereby removably and releasably secure and store said toys neatly on said wall hanging.

4,543,279

PLASTIC FILM PRODUCT

Hisao Kai, Chiba, Japan, assignor to Taisei Kako Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 472,172
Claims priority, application Japan, Mar. 3, 1982, 57-33580
Int. Cl.⁴ B65D *65/30*
U.S. Cl. 428—35 **14 Claims**



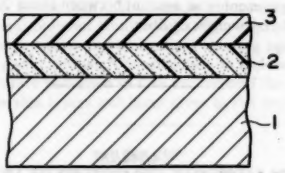
1. In a sealed bag formed of plastic film material including two sheets fused together along at least three fused edge surfaces thereof, the improvement wherein a plurality of minute scratches, sufficiently shallow and minute so as to be invisible to the naked eye, are densely formed only on said fused edge surfaces so as to reduce resistance to tearing through said fused edge surfaces perpendicularly thereto without reducing the toughness of interior portions of said sheets.

4,543,280

HEAT RESISTANT OVENABLE PAPERBOARD

Yuji Fujita; Keizo Wakasugi, and Ryoichi Kaneko, all of Toyama, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,058
Claims priority, application Japan, Jan. 27, 1984, 59-012028
Int. Cl.⁴ B65D *11/02*; B32B *5/16, 27/10*
U.S. Cl. 428—35 **9 Claims**



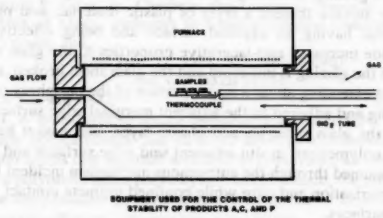
1. An ovenable paperboard comprising a paperboard substrate coated with a pigmented adhesive layer and a thermoplastic polymer film extruded thereon, said pigmented adhesive layer comprising an adhesive derived from a crosslinkable vinylpolymer and a crosslinker therefor, containing at least one pigment selected from the group consisting of koalin clay, titanium dioxide, mistures thereof and mixtures or koalin clay, titanium dioxide or both with up to 50% by weight of aluminum hydroxide, the pigment and the adhesive being present in a ratio between 85:15 and 70:30 on a solid weight basis said pigmented layer being present on the paperboard substrate in an amount in the range from 10 to 30 g/m² of said paperboard substrate, said ovenable paperboard retaining a brightness of at least 45% after exposure to 250° C. or 20 minutes and an adhesion strength of at least 40 g/15 mm between said pigmented adhesive layer and said thermoplastic film.

4,543,281

FIRE OR FLAME BARRIER MATERIAL

Narve S. Pedersen; Wilfred L. Persson; Jan Hordvik, and Arvid Kristiansen, all of Drammen, Norway, assignors to A/S Norsk Kabelfabrik, Norway

Continuation-in-part of Ser. No. 472,254, Mar. 4, 1983, abandoned, which is a continuation-in-part of Ser. No. 451,833, Dec. 21, 1982, abandoned. This application Nov. 8, 1983, Ser. No. 550,029
Claims priority, application Norway, May 7, 1982, 821503; Sep. 17, 1982, 823151
Int. Cl.⁴ B32B *7/00*
U.S. Cl. 428—36 **17 Claims**



EQUIPMENT USED FOR THE CONTROL OF THE THERMAL STABILITY OF PRODUCTS A,C, AND P

1. A fire or flame barrier material consisting essentially of 60–100 parts by weight of an ethylene copolymer matrix, 50–450 parts by weight of aluminum hydroxide and 150–600 parts by weight of a member selected from the group consisting of calcium carbonate and calcium-magnesium carbonate.

4,543,282

TUBULAR FOOD CASING HAVING IMPROVED PEELING PROPERTIES

Klaus-Dieter Hammer, Mainz; Hermann Winter, Wiesbaden; Erwin Kindl, Wiesbaden, and Heinz Luchterhand, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 17, 1983, Ser. No. 552,774
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1982, 3242655; May 24, 1983, 3318804
Int. Cl.⁴ F16L *11/02*; A23G *1/00*
U.S. Cl. 428—36 **26 Claims**

1. A tubular ring-shaped, medium or large diameter sausage casing having improved peelability properties for removing the casing from the food product contained therein, comprising:

a support comprising cellulose for forming a ring-shaped, medium or large diameter sausage casing, and

a coating applied to the inside surface of the support comprising a homogeneous mixture which includes:

a first component selected from a water-soluble cellulose ether, a starch ether or combination thereof, and

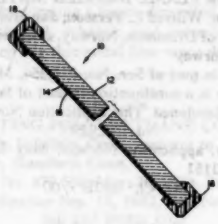
a second component selected from a wax, wherein the quantity by weight of said second component is less than about one-half the quantity by weight of said first component.

4,543,283

ENCAPSULATED GLAZING PRODUCT

Edward W. Curtze, Perrysburg, Ohio, and Siegfried H. Herliczek, Petersburg, Mich., assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Sep. 4, 1984, Ser. No. 646,942
Int. Cl.[4] B32B *3/02*
U.S. Cl. 428—38 17 Claims



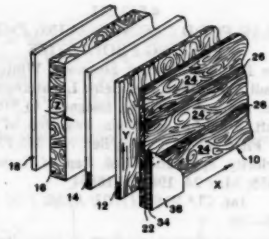
1. A glazing, including a glass substrate having adhered to a major surface thereof a layer of plastic material, said plastic material having an exposed surface and being effective to provide increased anti-lacerative properties to the glass sheet when the glazing is impacted and the glass sheet broken, and a gasket extending about a major portion of the periphery of the glazing and adhered to the adjacent marginal edge surfaces of both the glass substrate and plastic layer, said gasket having been polymerized in situ adjacent said edge surfaces and having assumed through the autogenous mechanism incident to its polymerization and cure while confined intimate contact with said surfaces.

4,543,284

VENEER LAMINATE COMPOSITE STRUCTURE

Charles S. Baum, 34108 E. Jefferson, St. Clair Shores, Mich. 48082

Filed Sep. 10, 1984, Ser. No. 649,215
Int. Cl.[4] B32B *3/00, 21/04, 27/38*
U.S. Cl. 428—106 10 Claims



1. A veneer laminate composite structure comprising:
A. at least one sheet of wood veneer;
B. a sheet of synthetic fibrous material;
C. a resin interposed between and bonding said sheets together;
D. a sheet of core material having a grain strength running in a direction generally normal to the plane of said sheets and juxtaposed to said sheet of synthetic fibrous material; and
E. further resin interposed between and bonding said sheet of synthetic fibrous material and said sheet of core material.

4,543,285

PLASTIC FILM

Klaus Thoese, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 21, 1984, Ser. No. 581,597
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1983, 3306190
Int. Cl.[4] B32B *27/08, 27/34, 27/36*
U.S. Cl. 428—201 13 Claims

1. A plastic film, comprising:
a plastic support; and
an antistatic coating applied on at least one surface of said support, said antistatic coating comprising a polyamino/-polyamide resin modified with epihalohydrin.

2. A plastic film as claimed in claim 1, further comprising a pigmented layer on the surface of said support opposite said antistatic coating.

4,543,286

COMPOSITE CONTAINING COATED EXTENDED CHAIN POLYOLEFIN FIBERS

Gary A. Harpell, Morristown; Sheldon Kavesh, Whippany; Igor Palley, Madison, and Dusan C. Prevorsek, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 359,976, Mar. 19, 1982, abandoned. This application Nov. 22, 1983, Ser. No. 554,464
The portion of the term of this patent subsequent to Sep. 6, 2000, has been disclaimed.
Int. Cl.[4] B32B *27/34;* D04H *1/58*
U.S. Cl. 428—288 18 Claims

1. A composite comprising a matrix and:
(a) a monofilament or multifilament fiber of polyethylene or polypropylene of weight average molecular weight at least about 500,000 having, in the case of polyethylene, a tenacity of at least about 15 g/denier and a tensile modulus of at least about 300 g/denier and, in the case of polypropylene, a tenacity of at least 8 g/denier and a tensile modulus of at least about 160 g/denier; and
(b) a coating on the monofilament and on at least a portion of the filaments of the multifilament containing a polymer having ethylene or propylene crystallinity, said coating being present in an amount between about 0.1% and about 200%, by weight of fiber.

4,543,287

FIBROUS MATERIAL COMPRISED OF VERMICULTE COATED FIBERS

Peter J. Briggs, Cheadle Hume; Kevin McAloon, Appleton Thorn, and Graham R. Rideal, Handbridge, all of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 545,103, Oct. 24, 1983, Pat. No. 4,442,164, which is a continuation of Ser. No. 281,104, Jul. 7, 1981, abandoned. This application Jan. 17, 1984, Ser. No. 571,580
Claims priority, application United Kingdom, Jul. 11, 1980, 8022713
Int. Cl.[4] D02G *3/00*
U.S. Cl. 428—288 6 Claims

1. A combustible fiber coated with lamellae of chemically delaminated vermiculite, the lamellae having a thickness of less than 0.5 micron and an aspect ratio of at least 10.

4,543,288

FIBRE REINFORCED PLASTICS SHEETS

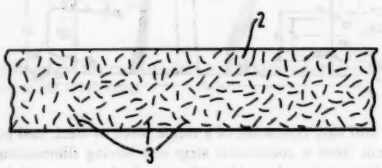
Bronislaw Radvan, Flackwell Heath; William T. H. Skelding, High Wycombe, and Anthony J. Willis, Marlow, all of England, assignors to The Wiggins Teape Group Limited, United Kingdom

Filed Jan. 4, 1985, Ser. No. 688,723

Claims priority, application United Kingdom, Jan. 6, 1984, 8400291

Int. Cl.[4] B32B *5/06*

U.S. Cl. 428—297 7 Claims



1. A solid fibre reinforced plastics material sheet comprising 20% to 60% by weight of reinforcing fibres having a high modulus of elasticity (as herein defined), a substantial proportion of the fibres being between 7 and 50 millimeters long and 13 microns or less in diameter, and 40% to 80% by weight of a thermoplastics material.

4,543,289

LAMINATED SKIN-FOAMED CORE SANDWICH STRUCTURES AND METHOD FOR THEIR PREPARATION

Im K. Park, Somerville, N.J., assignor to Tenneco Polymers, Inc., Houston, Tex.

Filed Dec. 24, 1984, Ser. No. 686,050

Int. Cl.[4] B32B *5/18, 17/04*

U.S. Cl. 428—304.4 15 Claims

14. A reinforced skin-foamed core sandwich structure that is the product obtained by

A. forming a sandwich construction comprising

1. two skin layers, each of which comprises at least two plies of a thermoplastic polymer composition having a glass transition temperature in the range of 75° to 85° C. and at least one ply of reinforcing fibers and

2. a core comprising a thermoplastic polymer composition having a glass transition temperature in the range of 60° to 70° C., said glass transition temperature being 10° to 20° C. lower than that of the polymer in the skin layers and said polymer being compatible with the polymer in the skin layers, and a chemical blowing agent and

B. heating said sandwich construction in a closed mold at a temperature sufficient to fuse and expand the core and to fuse the skin layers and bond them to the expanded core.

4,543,290

CHEMICAL RESISTANT DECORATIVE LAMINATES

Lenon G. Brooker, Hampton, and Donald L. Jarrell, Early Branch, both of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 26, 1984, Ser. No. 574,307

Int. Cl.[4] B32B *27/42;* C09J *5/02*

U.S. Cl. 428—336 16 Claims

1. A resin impregnated and resin coated, fibrous, cellulosic, heat and pressure consolidated, chemical resistant laminate, said laminate comprising a plurality of cellulosic sheets and having a bottom portion impregnated with phenol-aldehyde resin, a top portion impregnated at least about 1 mil deep and coated at least about 1 mil thick with vinyl ester terminated bisphenol A epoxy resin, and a middle portion impregnated with aminotriazine-aldehyde resin, where the aminotriazine-aldehyde resin contacts the vinyl ester terminated bisphenol A epoxy resin and functions as a barrier to phenolic resin contact with the vinyl ester terminated bisphenol A epoxy resin.

4,543,291

MULTILAYER STRUCTURE

Harold F. Giles, Jr., Cheshire, and Lorene E. Baccaro, Dalton, both of Mass., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 12, 1984, Ser. No. 680,823

Int. Cl.[4] B32B *27/36*

U.S. Cl. 428—412 8 Claims

1. A multilayer structure comprising an outer layer of aromatic polycarbonate, an outer layer of a polyolefin and a tie layer between the aromatic polycarbonate and polyolefin layer, such tie layer comprising a copolymer of an olefin and an acrylate.

4,543,292

MULTILAYER STRUCTURE

Harold F. Giles, Jr., Cheshire, and Lorene E. Baccaro, Dalton, both of Mass., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 12, 1984, Ser. No. 680,967

Int. Cl.[4] B32B *27/36*

U.S. Cl. 428—412 9 Claims

1. A multilayer structure comprising an outer layer of aromatic polycarbonate and an outer layer of a polyolefin, said outer layers tied together with a layer comprising an admixture of a polyolefin and a polyalkylene terephthalate, the polyalkylene terephthalate present in quantities in the tie layer so as to provide adhesion between the outer layers.

4,543,293

POLARIZED, SHAPED MATERIAL OF COPOLYMER OF VINYLIDENE FLUORIDE

Ken'ichi Nakamura; Teruo Sakagami; Yoshikichi Teramoto, and Hiroshi Obara, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1983, Ser. No. 496,472

Claims priority, application Japan, May 28, 1982, 57-90600

Int. Cl.[4] H01L *41/18, 41/20*

U.S. Cl. 428—421 8 Claims

1. A polarized, shaped material comprising a copolymer of 40 to 87 mol % of vinylidene fluoride, 10 to 40 mol % of trifluoroethylene and 3 to 20 mol % of vinyl fluoride.

4,543,294

POLYMER DIELECTRIC COMPRISING COPOLYMER OF VINYLIDENE FLUORIDE, TETRAFLUOROETHYLENE AND ETHYLENE

Teruo Sakagami; Noriyuki Arakawa, both of Iwaki, and Haruko Kakutani, Ichikawa, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,535

Claims priority, application Japan, Jun. 4, 1983, 58-98777

Int. Cl.[4] B32B *27/00;* H01G *4/08*

U.S. Cl. 428—422 7 Claims

1. A polymer dielectric comprising a copolymer of 20 to 33 mol. % of vinylidene fluoride, 15 to 45 mol. % of ethylene and 30 to 65 mol. % of tetrafluoroethylene, and having a dielectric constant of 4.0 or above and a dielectric dissipation factor of 0.8% or below at 20° C. and 1 KHz, said copolymer having been obtained through suspension polymerization in water, or bulk polymerization, and having a sufficiently large degree of polymerization to provide said dielectric dissipation factor.

4,543,295

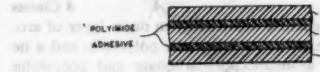
HIGH TEMPERATURE POLYIMIDE FILM LAMINATES AND PROCESS FOR PREPARATION THEREOF

Anne K. St. Clair, and Terry L. St. Clair, both of Poquoson, Va., assignors to The United States of America as represented by the director of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 189,234, Sep. 22, 1980, abandoned. This application Oct. 24, 1984, Ser. No. 663,840

Int. Cl.[4] B32B *15/08*

U.S. Cl. 428—458 42 Claims



32. A laminate of high-temperature polyimide film and metal foil comprising of:

at least two layers of thin polyimide film;

a metal foil layer between said two layers of polyimide film;

a thermoplastic polyimide adhesive layer between each surface of the metal foil layer and the adjacent polyimide film layer;

the polyimide film, metal foil and adhesive being assembled to form a film-adhesive-metal-adhesive-film sandwich;

said polyimide adhesive layer being formed from a polyamic acid imidized to remove its solvent and converted to the polyimide state prior to being assembled in the sandwich; and

said sandwich assembly being bonded together under heat and pressure to form a void-free laminate structure.

4,543,296

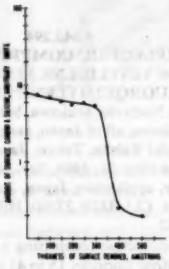
CONDUCTIVE POLYMERS

Nathan T. Melamed, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 11, 1984, Ser. No. 569,874

Int. Cl.[4] B32B *27/30*

U.S. Cl. 428—522 22 Claims



1. A method of making a conductive polymer from a non-aromatic ethylenically unsaturated gaseous neutral addition-polymerizable monomer, comprising bombarding an inert substrate with said monomer at a velocity greater than Mach 1 in a vacuum.

4,543,297

STIFF METAL RING AND PROCESS FOR MAKING IT

Phillip E. Saurenman, 3438 Vosburg St., Pasadena, Calif. 91107

Division of Ser. No. 318,015, Nov. 4, 1981, Pat. No. 4,395,900, which is a division of Ser. No. 16,970, Mar. 2, 1979, abandoned. This application Jun. 2, 1983, Ser. No. 500,271

Int. Cl.[4] B21D *39/02*

U.S. Cl. 428—582 9 Claims

1. A stiff ring consisting of a single piece of steel, said piece being cut from a continuous strip and having dimensions of width, thickness, and axial length, and also having parallel side edges extending along the dimension of length, and a pair of axially spaced apart ends extending between the side edges, the first of said ends having an axially recessive recess spaced from both of said side edges, the second of said ends having an axially projecting tongue spaced from both of said side edges, said tongue having a pair of locking segments, one at each side thereof, said segments diverging from one another as they extend away from said first end, and a pair of pilot segments extending from the locking segments on the other side thereof from said second end, said pilot segments not diverging from one another as they extend away from said first end, said tongue and said recess being substantially congruent, whereby said recess is bounded by a pair of locking segments which converge toward one another as they extend away from said second end and a pair of clearance segments which do not converge toward one another as they extend away from said second end, said piece having been bent to form a U-shape having a pair of arms and half cylinder bight, and with the said bight restrained to a cylindrical mandrel by a half cylinderical die part, the said ends having been pressed along a concave half cylinder surface in a second die part, thereby to be deflected toward one another, with the pilot segments of the tongue holding the locking segments of the tongue above said concave half cylinder surface of second die part, and with the tip of the tongue galled by said die, and with part of its edge galled, so that mating recess end and its locking segment pass under the tongue locking section, and then the tongue and recess are pressed into surface continuity, to form an interlocking joint, with much of said galling having been smoothed out, and are thereby radially locked between die and mandrel in final forming of cylinder, the ring thereafer having been removed from said mandrel, said tongue being spaced laterally from the side edges, and in which said tongue was initially bent in a direction away from the inside of the rings.

4,543,298

METAL CORD

Josef Riedl, Styria, Austria, assignor to Stahlcord Betriebsgesellschaft m.b.H., Austria

Filed Aug. 21, 1984, Ser. No. 642,861

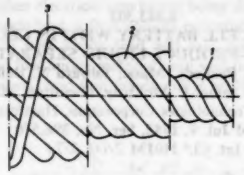
Claims priority, application Austria, Aug. 24, 1983, 3019/83

Int. Cl.[4] B60C *9/00*; D07B *1/06*

U.S. Cl. 428—592 5 Claims

1. A metal cord for reinforcing elastomeric bodies and having a plurality of strands of identical twisting sense, comprising a core and at least one adjacent outer layer, the strands of the core having a shorter twisting pitch than the twisting pitch of the adjacent outer layer, and having at least one retaining helix

on the outside of said cord, said helix being made of a material whose softening temperature is in a range which at least partially overlaps the cross-linking temperature range of the elastomer to be reinforced.

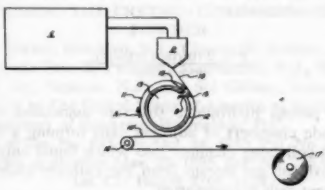


4,543,299

LAMINATED, SEAMLESS, CYLINDRICAL METAL SCREEN FOR VACUUM PERFORATION OF THERMOPLASTIC FILM

Garland E. Raley, and Dean M. Spear, both of Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.

Filed Sep. 21, 1983, Ser. No. 534,359
Int. Cl.[4] B22B *1/00*
U.S. Cl. 428—596 **12 Claims**



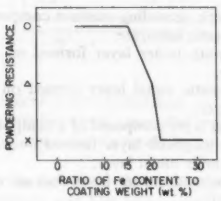
1. A laminated, seamless, cylindrical metal screen or molding element for vacuum perforation of plastic film or sheets, comprising two or more relatively thin geometrically identical, seamless, cylindrical metal screens, each of said relatively thin screens being sufficiently thin so that it may be readily malformed and subsequently reformed to its original cylindrical shape, each of said relatively thin screens having a plurality of openings or holes therein, said relatively thin screens stacked and bonded together diametrically one inside the other to provide the laminated cylindrical metal screen, the holes of each of said thin screens being substantially aligned with the holes of the other of said thin screens, the individual geometry of the aligned holes in said relatively thin screens being substantially identical, the holes of said laminated, seamless, cylindrical metal screen thereby having substantially straight walls perpendicular to the surface of said laminated, seamless, cylindrical metal screen, and said laminated, seamless, cylindrical metal screen having a total screen thickness of about 0.01 to 0.1 inches.

4,543,300

IRON-ZINC ALLOY ELECTRO-GALVANIZED STEEL SHEET HAVING A PLURALITY OF IRON-ZINC ALLOY COATINGS

Tomihiro Hara; Takeshi Adaniya; Masaru Sagiyama, all of Yokohama; Tsutomu Watanabe, Fukuyama; Takashi Shimoma, Yokohama, and Masaru Nabatame, Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1984, Ser. No. 604,993
Claims priority, application Japan, May 14, 1983, 58-84761
Int. Cl.[4] C23C *1/02*
U.S. Cl. 428—610 **10 Claims**



1. An iron-zinc alloy electro-galvanized steel sheet having a plurality of iron-zinc alloy coatings, which comprises:

at least one iron-zinc alloy coating as the lower layer, formed on at least one surface of a steel sheet; and

at least two iron-zinc alloy coating as the upper layer, formed on said at least one iron-zinc alloy coating as the lower layer, the ratio of iron content to the coating weight of each of said at least one iron-zinc alloy coating as the upper layer being higher than the ratio of iron content to the coating weight of each of said at least one iron-zinc alloy coating as the lower layer;

the ratio of iron content to the coating weight of each of said at least one iron-zinc alloy coating as the lower layer being within the range of from 1 to 15 wt.%, and the total coating weight of said at least one iron-zinc alloy coating as the lower layer being within the range of from 1 to 50 g/m^2 per side of said steel sheet;

the ratio of iron content to the coating weight of each of said at least two iron-zinc alloy coatings as the upper layer being over 15 wt.%, the ratio of iron content to the coating weight gradually increasing from the innermost coating toward the outermost coating of said at least two iron-zinc alloy coatings as the upper layer, the difference in the ratio of iron content to the coating weight between two adjacent coatings of said at least two iron-zinc alloy coatings as the upper layer being within the range of from 1 to 15 wt.%, and the total coating weight of said at least two iron-zinc alloy coatings as the upper layer being within the range of from 1 to 40 g/m^2 per side of said steel sheet;

the difference in the ratio of iron content to the coating weight between the uppermost coating of said at least one iron-zinc alloy coating as the lower layer and the lowermost coating of said at least two iron-zinc alloy coatings as the upper layer being within the range of from 1 to 15 wt.%; and

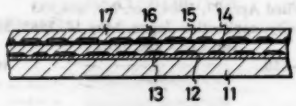
the sum of said total coating weight of said at least one iron-zinc alloy coating as the lower layer and said total coating weight of said at least two iron-zinc alloy coatings as the upper layer being within the range of from 10 to 75 g/m^2 per side of said steel sheet.

4,543,301

MAGNETIC RECORDING MEDIUM

Kenji Yazawa, and Kenichi Baba, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 10, 1983, Ser. No. 521,910
Claims priority, application Japan, Aug. 12, 1982, 57-140248
Int. Cl.⁴ G11B *5/66*; B32B *15/04*
U.S. Cl. 428—621 **8 Claims**



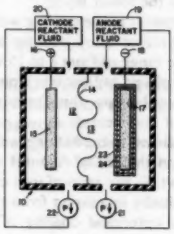
1. A magnetic recording medium comprising:
a non-magnetic substrate;
a first bismuth under layer formed on said non-magnetic substrate;
a first magnetic metal layer formed on said first bismuth under layer;
a compound layer composed of a compound of the metal of said first magnetic layer formed on a surface portion of said magnetic metal layer;
a second bismuth under layer formed on said compound layer; and
a second magnetic metal layer formed on said second bismuth under layer.

4,543,302

NEGATIVE ELECTRODE CATALYST FOR THE IRON CHROMIUM REDOX ENERGY STORAGE SYSTEM

Randall F. Gahn, Columbia Station, and Norman H. Hagedorn, Berea, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 20, 1984, Ser. No. 642,310
Int. Cl.⁴ H01M *8/18*, *10/36*
U.S. Cl. 429—15 **20 Claims**



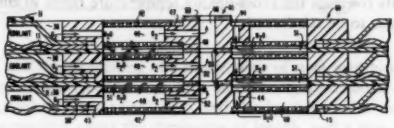
1. A REDOX system comprising:
a cell having first and second chambers separated by a cation permeable membrane;
a first electrically conductive, electrode disposed in said first chamber;
a second electrically conductive electrode disposed in said second chamber;
a first reactant fluid including iron chloride, chromium chloride and bismuth nitrate in an aqueous HCl solution, said first and second electrodes being inert to the reactant fluid and;
a second reactant fluid including iron chloride, chromium chloride and bismuth nitrate in an aqueous HCl solution, said first and second electrodes being inert to the reactant fluid;
means for directing said first and second reactant fluids through said first and second chambers, respectively, whereby a difference in electrical potential applied between said first and second electrodes causes bismuth to plate onto the most negative electrode.

4,543,303

FUEL CELL BATTERY WITH IN CELL OXIDANT-PRODUCT LIQUID SEPARATORS

Philip Dantowitz, Peabody, Mass.; Edward N. Balko, Middletown, N.J., and James F. McElroy, Hamilton, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 9, 1982, Ser. No. 396,570
Int. Cl.⁴ H01M *2/00*, *2/14*
U.S. Cl. 429—34 **8 Claims**



1. A fuel cell battery comprising at least two adjoining fuel cells each of said cells comprising:
(a) an ion transporting membrane separating the cell into anode and cathode chambers,
(b) anode and cathode electrodes in intimate contact with opposite surfaces of said ion transporting membrane,
(c) bipolar separator means positioned between the ion transporting membranes of adjacent cells, adapted to contact the anode electrode of one cell and the cathode electrode of an adjacent cell,
(d) means for supplying a fuel gas to the anode chamber and an oxidant gas to the cathode chamber,
(e) separating means associated with the cathode chamber of each cell for separating product liquids entrained in the oxidant gas stream from the gas stream, including a porous, hydrophilic structure which is permeable to liquid but is impermeable to gas flow at gas pressures below the "bubble pressure P" of the porous structure, where "bubble pressure P" is related to the pore size of the structure by the relationship:

$$P = \frac{2\ (\text{surface tension})}{\text{pore radius}}$$

(f) the porous hydrophilic structure associated with the cathode chambers of adjacent cells forming a common liquid collecting chamber into which liquid entrained in the oxidant gas stream from the cathode chambers of adjacent cells is transported,
(g) separate output manifold means common to all of said fuel cells communicating with the liquid collecting chamber for receiving liquid passing through said liquid permeable means, and common output manifold means for all of said fuel cells for receiving oxidant gas after removal of product liquid.

4,543,304

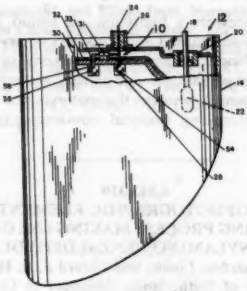
LITHIUM CELL HAVING DEPLETION GAUGE

Abel DeHaan, Pembroke Pines, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Mar. 19, 1984, Ser. No. 591,015
Int. Cl.⁴ H01M *10/48*
U.S. Cl. 429—91 **27 Claims**

9. An electrochemical cell comprising: an outer conductive housing; a cathode material inside said housing and in direct electrical contact with said housing; at least first and second adjacent lithium anode materials inside said housing and spaced from said cathode material by porous insulative separator saturated with an electrolyte; a first anode lead; first and

second electrical sensing conductors connected respectively to said first and second anode materials; a resistor coupling one of said first and second electrical conductors to said first anode lead; said other electrical conductor being directly coupled to said first anode lead; a first voltage potential being developed between said first anode lead and said conductive housing through said first anode material until said first anode material is consumed and said first conductor is no longer in electrical



contact with any anode material and a second voltage potential then being developed between said first anode lead and said conductive housing through said second conductor, said second voltage potential being different than said first voltage potential as a result of said resistor being coupled between one of said first and second conductors and said first anode lead, and said different second voltage potential indicating a predetermined level of discharge of said cell.

4,543,305

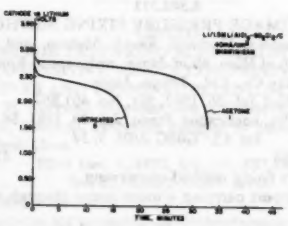
METHOD OF PRETREATING CARBON BLACK POWDER TO IMPROVE CATHODE PERFORMANCE AND LITHIUM SULFURYL CHLORIDE CELL INCLUDING THE PRETREATED CARBON BLACK POWDER

Michael Binder, Brooklyn, N.Y.; Charles W. Walker, Jr., Freehold, N.J.; Eric R. Petersen, Manchester, N.J.; William L. Wade, Jr., Neptune, N.J., and Sol Gilman, Rumson, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 544,770, Oct. 24, 1983, Pat. No. 4,526,881. This application Mar. 25, 1985, Ser. No. 715,808

Int. Cl.[4] H01M *4/96, 6/14*

U.S. Cl. 429—101 **6 Claims**



1. A lithium sulfuryl chloride electrochemical cell including polytetrafluoroethylene bonded carbon cathodes and having an improved cathode operating voltage and an increased cathode life, said improvements being obtained by pretreating the carbon black powder with acetone prior to cathode fabrication.

4,543,306

ELECTROCHEMICAL DEVICE WHICH CAN BE USED FOR ENERGY STORAGE

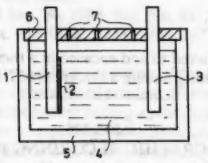
Jean C. Dubois; Gérard Tourillon, and Francis Garnier, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 31, 1983, Ser. No. 499,788

Claims priority, application France, Jun. 1, 1982, 82 09513

Int. Cl.[4] H01M *4/60;* **G02F** *1/01*

U.S. Cl. 429—194 **14 Claims**



1. An electrochemical device comprising

a cell containing an electrolyte suspended in a solvent and at least a first and a second electrode in contact with this electrolyte,

whereby at least the first electrode has a polymer film on a conductive support, said film being obtained by electrochemical polymerization of at least one monomer M, said polymer having a conductivity of 10^{-2} to 10^{+2} $ohm^{-1}cm^{-1}$ and complying with the general formula

$$(M^{+}X^{-}y)_n$$

in which

X^{-} represents an anion obtained from the electrolyte used during the polymerization process,

y is the anion proportion related to one mole of monomer and is 0.1 to 0.5, and

n the degree of polymerization, wherein the monomer is either

(a) an heterocycle substituted by at least one of the groups R_1 and R_2, of the formula

with

X=O, and R_1 and

R_2 are alkyl, alkoxyl, hydroxyl, aryl, substituted aryl, halogen, methyl trihalide, cyano amino or dialkylamino.

4,543,307

OPTICAL DATA STORAGE AND RECORDING MEDIA HAVING RECORDING SURFACE PROTECTION

Jerome Drexler, Los Altos Hills, and Richard Haddock, Redwood City, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

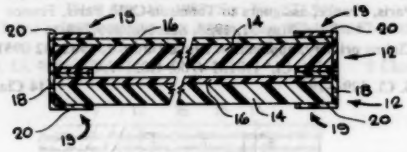
Filed Feb. 17, 1984, Ser. No. 581,324

Int. Cl.[4] G03C *3/00, 1/00*

U.S. Cl. 430—12 **3 Claims**

1. An optical recording medium comprising, a substrate having at least one major surface having a layer of optical

recording material thereon, said substrate and said layer of optical recording material having lateral edge regions, said



edge regions adhered to and encased in a thermosetting plastic coating, said coating having a thickness of less than 5 microns.

4,543,308

PHOTOGRAPHIC RECORDING PROCESS

Hans-Joachim Schumann, Cologne; Hans Öhlschläger, Bergisch-Gladbach, and Helmut Kampfer, Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 22, 1983, Ser. No. 487,855

Claims priority, application Fed. Rep. of Germany, May 4, 1982, 3216568

Int. Cl.⁴ G03C *11/00, 5/16, 1/46*

U.S. Cl. 430—21 **9 Claims**

1. A photographic recording process, in which a latent luminescence image is produced by the image-wise exposure of a photosensitive photographic recording material, wherein a photographic recording material comprising at least one layer which contains photosensitive silver halide and at least one compound capable of luminescence is exposed image-wise and developed by a silver halide developer to thereby produce a silver image and a latent luminescence image superimposed on the silver image, and the image information contained in the latent luminescence image is scanned photoselectively by a luminescence spectroscopic process and is recorded electronically in the form of monochromatic luminescence signals.

2. The recording process as claimed in claim 1, wherein

a silver image is produced by image-wise exposure and development in at least one layer of a photographic recording material which contains in said layer photosensitive silver halide and a uniform distribution of a compound capable of luminescence, the luminescence of said compound capable of luminescence being weakened image-wise (in the event of excitation) by said silver image,

the silver image is scanned by a beam of monochromatic light of a wavelength suitable for the excitation of the luminescence of said compound capable of luminescence, and

the image information in the form of the luminescence thus excited is detected quantitatively by an opto-electronic transducer device, is converted into electronic image signals and is recorded electronically.

4,543,309

HEAT-DEVELOPABLE IMAGE-PATTERN RECORDING MATERIAL

Shigeto Hirabayashi, Hachioji; Toyoaki Masukawa, Hinode; Wataru Ishikawa, Hachioji, and Tetsuya Harada, Chofu, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 491,389, May 4, 1983, abandoned. This application May 16, 1984, Ser. No. 610,864

Claims priority, application Japan, May 7, 1982, 57-76836

Int. Cl.⁴ G03G *13/00, 13/22;* **G03C** *1/02*

U.S. Cl. 430—31 **8 Claims**

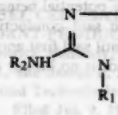
1. A heat-developable image-pattern recording material of enhanced developability and stability having on a support a heat-developable image-pattern recording layer containing

(a) a silver salt of a benzotriazole,

(b) a reducing agent,

(c) a binder and

(d) at least one compound having the following Formula:



Formula [I]

wherein R_1 represents a hydrogen, an amino radical, or a substituted or unsubstituted alkyl, alkenyl or aryl radical; R_2 represents a hydrogen, an amino, alkyl, alkenyl or aryl radical.

3. A heat developable image-pattern recording material according to claim 1 wherein the material heat-developable image-pattern recording material contains a light-sensitive silver salt.

4,543,310

ELECTROPHOTOGRAPHIC ELEMENT AND PHOTOCOPYING PROCESS MAKING USE OF CERTAIN 4-[BIS-PHENYLAMINO]BENZALDEHYDE AZINES

Roelof H. Everhardus, Lomm, and Gerard J. E. H. van Lomm, Tegelen, both of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands

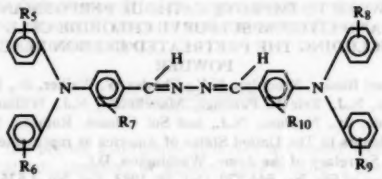
Filed Jan. 20, 1983, Ser. No. 459,382

Claims priority, application Netherlands, Jan. 29, 1982, 8200331

Int. Cl.⁴ G03G *5/06, 5/14;* **C09C** *109/12*

U.S. Cl. 430—59 **20 Claims**

1. A multi-layered electrophotographic element comprising an electrically conductive support carrying a photoconductive layer containing at least one radiation-sensitive charge generating compound, and applied to the photoconductive layer a charge transporting layer containing as a charge transporting agent homogeneously distributed in an insulating binder an azine which has the general structural formula



wherein R_5 to R_{10} each represents a hydrogen atom or an alkyl group having 1 to 4 C atoms.

4,543,311

TONER IMAGE PRESSURE FIXING METHOD

Hiroyuki Takagiwa, Hachioji; Syunji Matsuo, and Makoto Tomono, both of Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,857

Claims priority, application Japan, Jul. 30, 1981, 56-120472

Int. Cl.⁴ G03G *9/08, 9/14*

U.S. Cl. 430—98 **41 Claims**

1. A pressure fixing method comprising

passing a support carrying a toner image through a pair of rollers,

said toner image consisting essentially of a toner which comprises

a polybutadiene prepolymer having a number average molecular weight of up to 5000 and a polymer, wherein said polymer is admixed with, or polymerized in the presence of, said prepolymer, and said rollers are loaded with a linear pressure from 5 to 70 kg/cm, said prepoly-

mer being present in an amount of from 1% to 40% by weight of said polymer.

4,543,312

MAGNETIC TONER COMPRISING MAGNETIC POWDERS HAVING CONTROLLED SIZE DISTRIBUTION

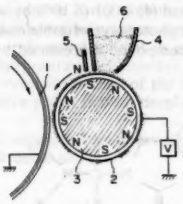
Kazunori Murakawa, Tokyo; Yasuo Mitsuhashi; Hitoshi Uchide, both of Yokohama; Seiichi Takagi; Masaki Uchiyama, both of Tokyo; Hisayuki Ochi, Tokyo; Motoo Urawa, Funabashi, and Eiichi Imai, Narashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,667

Claims priority, application Japan, Apr. 27, 1982, 57-70698; Apr. 27, 1982, 57-70699; Apr. 27, 1982, 57-70702

Int. Cl.[4] G03C *1/02;* **C03G** *9/08*

U.S. Cl. 430—107 **23 Claims**



1. A magnetic color toner comprising a colorant, magnetic powders and binder resin, said colorant having a color different from that of the magnetic powder, characterized by the particle size distribution of the magnetic powders that the particle size of 50% accumulated volume, the particle size of 25% accumulated volume and the particle size of 75% accumulated volume of the magnetic powders are 1.5–4.5μ, 1.0–4.0μ and 2.5–6.0μ, respectively.

4,543,313

TONER COMPOSITIONS CONTAINING THERMOTROPIC LIQUID CRYSTALLINE POLYMERS

Hadi-Khan Mahabadi, Mississauga, and Lupu Alexandru, Toronto, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1984, Ser. No. 637,188

Int. Cl.[4] G03G *9/10*

U.S. Cl. 430—109 **28 Claims**

1. An improved toner composition comprised of resin particles selected from the group consisting of thermotropic liquid crystalline polycarbonates, copolycarbonates, polyurethanes, polyesters, and copolyesters, and pigment particles.

4,543,314

PROCESS FOR PREPARING ELECTROSTATOGRAPHIC PHOTOSENSITIVE DEVICE COMPRISING SODIUM ADDITIVES AND TRIGONAL SELENIUM PARTICLES

Kenneth H. Maxwell, deceased, late of Palmyra, N.Y. (by Shelagh M. Maxwell, executor), assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1983, Ser. No. 557,498

Int. Cl.[4] G03G *5/087, 5/00*

U.S. Cl. 430—134 **16 Claims**

1. A process for preparing an electrostatographic photosensitive device comprising combining a sodium additive selected from the group consisting of sodium carbonate, sodium bicarbonate, sodium selenite, sodium hydroxide and mixtures thereof with trigonal selenium particles substantially free of sodium, an organic resin binder and a solvent for said binder to form a milling mixture, milling said milling mixture to form a uniform dispersion, applying said dispersion to a substrate in an even layer having a sodium content identical to the sodium content of said milling mixture, and drying said layer.

4,543,315

STORAGE-STABLE PHOTOSENSITIVE COMPOSITION AND ARTICLE WITH ADDUCT OF DIAZO RESIN AND AMORPHOUS SULFOPOLYESTER

William J. Lorenz, and Wayne K. Larson, both of Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 30, 1983, Ser. No. 537,828

Int. Cl.[4] G03C *1/54, 1/68, 1/71*

U.S. Cl. 430—156 **12 Claims**

1. A light-sensitive adduct consisting of the combination of a diazo resin having a plurality of pendant diazonium groups and an amorphous sulfopolyester having a plurality of sulfo groups, said sulfo polyester comprising the esterification product of at least one organic diol and at least one carboxylic acid wherein at least about 30 mole percent thereof is selected from ortho-arylene and peri-arylene carboxylic acids, the arylene group thereof having from 6 to 14 carbon atoms, said sulfopolyester containing from about 1.0 to about 15 mole percent of sulfo groups based on the total moles of said diol and said carboxylic acid, said adduct being formed from the metathetical reaction of sulfo group-containing moieties of said sulfopolyester and said diazonium groups.

4. A presensitized light-sensitive article comprising a substrate having coated on one surface thereof a light-sensitive coating comprising an effective amount of an adduct, said adduct consisting of a combination of a diazo resin having a plurality of pendant diazonium groups and an amorphous sulfopolyester having a plurality of sulfo groups, said sulfo polyester comprising the esterification product of at least one organic diol and at least one carboxylic acid wherein at least about 35 mole percent thereof is selected from ortho-arylene and peri-arylene carboxylic acids, the arylene group thereof having from 6 to 14 carbon atoms, said sulfopolyester containing from about 1.0 to about 15 mole percent of sulfo groups based on the total moles of said diol and said carboxylic acid, said adduct being formed from the metathetical reaction of sulfo group-containing moieties of said sulfopolyester and said diozonium groups.

11. The light sensitive article of claim 4 wherein a subbing layer is interposed between said coating and said substrate.

12. The light sensitive article of claim 11 wherein said subbing layer comprises an aqueous solvent soluble polymeric diazonium compound.

4,543,316

DRAFTING MATERIAL

Klaus Thoese, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 21, 1984, Ser. No. 581,596

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1983, 3306191

Int. Cl.[4] G03C *1/52;* **B32B** *27/08, 27/34*

U.S. Cl. 430—162 **14 Claims**

1. A drafting material for receiving an aqueous ink, comprising:

a plastic support;

an adhesive layer applied on at least one surface of said support;

a layer of lacquer applied on said adhesive layer; and

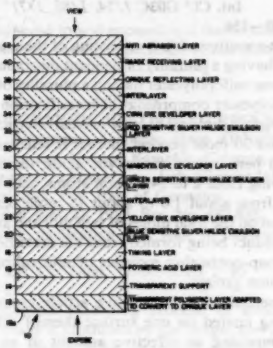
a top layer, comprising a homo- or copolymer of vinyl acetate and an antistatic agent, said antistatic agent comprising a polyamino/polyamide resin modified with an epihalohydrin.

2. A drafting material as claimed in claim 1, further comprising a layer of light-sensitive material on the reverse surface of the film.

4,543,317
PHOTOGRAPHIC SYSTEM WITH SALT OF PHENYLMERCAPTOAZOLE AND QUATERNARY RADICAL

Avinash C. Mehta, Belmont, and Lloyd D. Taylor, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 19, 1984, Ser. No. 683,396
Int. Cl.[4] G03C 1/40, 5/54, 5/38
U.S. Cl. 430—219 20 Claims



12. A diffusion transfer film unit comprising:

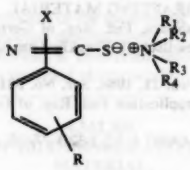
(a) a photosensitive element comprising a support, a silver halide emulsion in a layer carried by said support and an image dye-providing material in a layer carried by said support on the same side thereof as said silver halide emulsion;

(b) a second sheet-like element adapted to be superposed on said photosensitive element during or after photoexposure;

(c) an image receiving layer positioned in one of said photosensitive or second sheet-like element;

(d) a rupturable container releasably holding an aqueous alkaline processing composition and so positioned as to be adapted to distribute said processing composition between predetermined layers of said elements; and

(e) present in a least one of said photosensitive and second sheet-like elements a compound represented by the formula



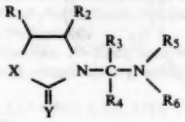
wherein X represents the nonmetallic atoms necessary to form a nucleus which completes a five or six member heterocyclic moiety; R is either a group which has a pKa of from about 7 to about 14 which is ionizable to an anion and wherein the silver salt of the mercaptan resulting from dissociation of said compound is more soluble in the range within which R is ionized to an anion than it is below that pH range, or a precursor thereof; and R_1, R_2, R_3 and R_4 are each independently alkyl, or R_1 is $-(CH_2)_n-R_5$ and R_2, R_3 and R_4, together with the nitrogen atom, form a six member heterocyclic ring; R_5 is hydrogen, phenyl or substituted phenyl; and n is an integer of from 1 to 6.

4,543,318
PHOTOPOLYMERIZABLE COMPOSITION CONTAINING HETEROCYCLIC ADDITIVES

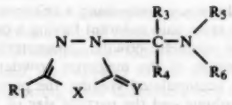
Minoru Maeda; Masayuki Iwasaki, and Fumiaki Shinozaki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1984, Ser. No. 626,950
Claims priority, application Japan, Jul. 1, 1983, 58-119558; Jul. 1, 1983, 58-119559
Int. Cl.[4] G03C 1/68
U.S. Cl. 430—288 14 Claims

1. A photopolymerizable composition comprising (1) a thermoplastic polymeric binder, (2) 10 to 500 parts by weight per 100 parts of the thermoplastic polymer binder of a non-gaseous ethylenically unsaturated compound which has at least two ethylenically unsaturated terminal groups and is capable of forming a polymer, (3) 0.1 to 20 parts by weight per 100 parts by weight of the non-gaseous ethylenically unsaturated compound of a photopolymerization initiator which is activated by actinic radiation, and (4) 0.001 to 10% by weight based on the total weight of the photopolymerizable composition of at least one heterocyclic compound represented by the Formulae (I) and (II)

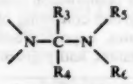


(I)



(II)

wherein R_1 and R_2 each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, an aralkyl group, or a substituted or unsubstituted amino group; R_3 and R_4 each represents a hydrogen atom, an alkyl group, or an aryl group; R_5 and R_6 each represents a hydrogen atom, a substituted or unsubstituted alkyl group, an aryl group, or an aralkyl group, or R_5 and R_6 may be taken together with the adjacent nitrogen atom to form a pyrrolidone, piperidine, morpholine, or N-substituted piperazine ring; X represents an oxygen atom, a sulfur atom, a group



wherein R_3, R_4, R_5 and R_6 are as defined above, or a group $=N-R_7$, wherein R_7 represents a hydrogen atom, an alkyl group, or an aryl group; and Y represents an oxygen atom or a sulfur atom.

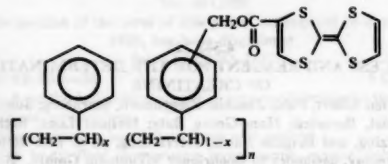
4,543,319
POLYSTYRENE-TETRATHIAFULVALENE POLYMERS AS DEEP-ULTRAVIOLET MASK MATERIAL

Vivian W. Chao, Yorktown Heights; Frank B. Kaufman, Amawalk; Steven R. Kramer, Peekskill, and Burn J. Lin, Scarsdale, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 454,811, Dec. 30, 1982, abandoned.
This application Jan. 15, 1985, Ser. No. 692,010
Int. Cl.[4] G03C 5/16
U.S. Cl. 430—312 19 Claims

1. A method for producing a negative resist image which consists of:

(a) coating a substrate with a deep-ultraviolet sensitive polymer;
(b) coating said deep-ultraviolet sensitive polymer with an undyed halocarbon-doped electroactive polymer having the repeating unit:



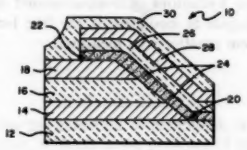
wherein the value of X is $0 \leqq X < 1$ and n is from about 50 to about 10,000;
(c) pattern exposing said halocarbon-doped electroactive polymer with E-beam or X-ray radiation;
(d) developing said exposed halocarbon-doped electroactive polymer with a preferential solvent to reveal portions of the underlying deep-ultraviolet sensitive polymer;
(e) exposing said revealed portions of the underlying deep-ultraviolet sensitive polymer with deep-ultraviolet radiation; and
(f) developing said exposed deep-ultraviolet sensitive polymer with a preferential solvent.

4,543,320

METHOD OF MAKING A HIGH PERFORMANCE, SMALL AREA THIN FILM TRANSISTOR

Meera Vijan, Oakland County, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 8, 1983, Ser. No. 549,991
Int. Cl.[4] G03C *5/00*; H01L *29/78*
U.S. Cl. 430—314 **31 Claims**



1. A method of forming a thin film field effect transistor, said method comprising the steps of:
depositing a first conductive layer on said substrate;
depositing a layer of insulating material over said first conductive layer;
depositing a second conductive layer over said insulating layer;
removing a portion of said first conductive layer, said insulating layer and said second conductive layer to form a non-coplanar surface with respect to said substrate;
depositing a semiconductor layer over at least a portion of said non-coplanar surface to form an electrical connection with said first and second conductive layers;
depositing a gate insulator layer over at least a portion of said semiconductor layer; and
depositing a gate electrode layer over at least a portion of said gate insulator layer adjacent to said semiconductor layer.

9. The method according to claim 1 wherein said step of removing a portion of said insulating, said first conductive, and said second conductive layers comprises the steps of:
deposition a layer of photoresists over said first conductive, insulating, and second conductive layers;
underexposing a portion of said photoresist;
overdeveloping said photoresist; and
etching said photoresist and portions of said first conductive, insulating, and second conductive layers to form said non-coplaner surface.

4,543,321
Patent Not Issued For This Number

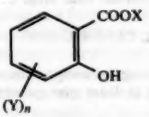
4,543,322

PROCESS FOR THE PROCESSING OF COLOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Takatoshi Ishikawa, and Junya Nakajima, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 30, 1984, Ser. No. 595,186
Claims priority, application Japan, Mar. 31, 1983, 58-55697
Int. Cl.[4] G03C *5/30, 7/16, 7/30*
U.S. Cl. 430—380 **20 Claims**

1. A process for processing an imagewise exposed color photographic silver halide light-sensitive material comprising processing the color photographic silver halide light-sensitive material with a color developer containing at least one compound represented by the general formula (I):



(I)

wherein X is a hydrogen atom, an alkali metal atom, an ammonium group, an alkyl group, or an aryl group; Y is a substituent on the phenyl group and is a halogen atom, an alkyl group, an alkoxy group, an amino group, a hydroxyl group, a nitro group, a sulfonic acid group or a carboxylic group, a nitro

group, a sulfonic acid group or a carboxylic acid group; and n is 0, 1, 2, 3 or 4; and said color developer additionally contains a hydroxylamine.

4,543,323

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Toshifumi Iijima; Satoshi Nakagawa, and Hiroshi Menjo, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,148

Claims priority, application Japan, Dec. 18, 1982, 57-223495; Dec. 20, 1982, 57-221966

Int. Cl.⁴ G03C *1/46*

U.S. Cl. 430—503 **21 Claims**

1. A light-sensitive silver halide photographic material having at least one light-sensitive layer constituted of a plural number of silver halide emulsions which are substantially the same in color sensitiveness but different in light sensitivity and containing a diffusion resistant coupler for photography capable of forming a diffusion resistant color forming dye through the reaction with the oxidized product of a color developing agent provided on a support, which comprises a non-light-sensitive intermediate layer provided at least adjacent to the silver halide emulsion layer with the highest light sensitivity among said plural number of silver halide emulsion layers on its support side, said non-light-sensitive intermediate layer containing a diffusion resistant coupler capable of forming a migratable color forming dye which can be color formed to substantially the same hue as the said diffusion resistant color forming dye through the coupling reaction with the oxidized product of a color developing agent or a compound capable of forming a flow-out type coupling product through the coupling reaction with the oxidized product of a color developing agent.

4,543,324

PROCESS FOR HARDENING PHOTOGRAPHIC GELATIN WITH VINYL SULFONES CONTAINING SULFONYL ETHYL SULFATE GROUPS

Wolgang Himmelmann, Leverkusen, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 26, 1984, Ser. No. 654,534

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3224983

Int. Cl.⁴ G03C *1/30*

U.S. Cl. 430—622 **4 Claims**

1. A process of hardening a photographic material consisting of a layer support and at least one gelatin-containing layer applied to this support,

comprising incorporating in the casting composition of a gelatin-containing layer applied to the layer support or in a gelatin-containing layer applied to the layer support

a cross-linking agent which is reactive with the amino groups of the gelatin

wherein the cross-linking agent is a compound containing at least one sulfone group and at least one vinyl sulfonyl ethylsulfate group as a water-solubilizing group in the form of their salts

and wherein the cross-linking activity of the compound with the gelatin is carried out after drying said gelatin-containing layer and at a Ph value of from 6 to 7.

4,543,325

PROCESS AND REAGENT FOR THE DETERMINATION OF CREATININE

Winfried Albert, Pähl; Joachim Ziegenhorn, Starnberg; Joachim Siedel, Bernried; Hans-Georg Batz; Helmut Lenz, both of Tutzing, and Brigitte Pautz, Herrsching, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

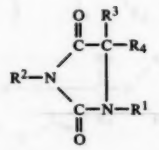
Filed Dec. 15, 1982, Ser. No. 449,925

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150878

Int. Cl.⁴ G01N *33/54;* C12Q *1/34;* C12N *9/96*

U.S. Cl. 435—7 **20 Claims**

1. Process for the immunological determination of creatinine, wherein creatinine is converted into 1-methylhydantoin, the 1-methylhydantoin formed is incubated in an aqueous medium with antibodies which are directed against a conjugate consisting of a first hydantoin derivative of the general formula:



(I)

in which R^1, R^2, R^3 and R^4, which can be the same or different, are hydrogen atoms, alkyl radicals containing up to 3 carbon atoms or phenyl radicals, covalently linked to a first hapten carrier substance suitable for antibody formation, reacted with a second conjugate consisting of a second hydantoin derivative of general formula (I) covalently linked to a second hapten carrier substance, either one of the incubation components antibody or second hydantoin derivative-second hapten carrier substance conjugate being adsorbed on a solid phase and the other component being present in dissolved form, or both incubation components being present in dissolved form, and the inhibition of the binding reaction between the antibodies and the second hydantoin derivative-second hapten carrier substance conjugate as mediated by the free 1-methyl hydantoin formed from creatinine, is measured.

4,543,326

STABILIZATION OF OXIDASE

Yoshinobu Miyashita, and Shinji Satomura, both of Osaka, Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 12, 1982, Ser. No. 441,156

Claims priority, application Japan, Nov. 12, 1981, 56-181443

Int. Cl.⁴ C12Q *1/48, 1/54, 1/44, 1/46*

U.S. Cl. 435—15 **28 Claims**

1. A process for stabilizing an oxidase which comprises adding an acidic amino acid or a salt thereof in an amount of 1 to 5% by weight to an aqueous solution of an oxidase selected from the group consisting of glycerol-3-phosphate oxidase, and choline oxidase.

4,543,327
MALATE DEHYDROGENASE METHOD

Larry H. Bernstein, 1725 Campus Dr., Binghamton, N.Y. 13903

Continuation-in-part of Ser. No. 340,132, Jan. 19, 1982, abandoned, which is a continuation of Ser. No. 158,121, Jun. 10, 1980, Pat. No. 4,311,791. This application Sep. 30, 1982, Ser. No. 431,028

The portion of the term of this patent subsequent to Jan. 19, 1999, has been disclaimed.

Int. Cl.⁴ C12Q *1/32*

U.S. Cl. 435—26 **5 Claims**

1. A method of indicating the presence of neoplastic tissue in a patient comprising:

(a) providing a body fluid from said patient,

said body fluid comprising cytoplasmic malate dehydrogenase,

(b) determining whether said body fluid comprises aberrant malate dehydrogenase by determining the Kms using oxaloacetate,

whereby the presence of aberrant malate dehydrogenase indicates the presence of neoplastic cells in said patient.

4,543,328
PROCESS FOR DETECTING PATHOGENS

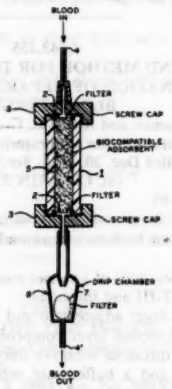
Franz Keller, and Hans Hennemann, both of Würzburg, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 973,280, Dec. 26, 1978, abandoned. This application Sep. 24, 1980, Ser. No. 190,540

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826416

Int. Cl.⁴ C12Q *1/24, 1/29, 1/04;* C12M *1/00*

U.S. Cl. 435—30 **19 Claims**



1. Process for the detection of pathogens, such as bacteria, fungi and viruses, in blood in the presence of an anticoagulant agent which comprises: separating a pathogen in an extracorporeal circulation of the blood, by passing the blood through a sterile adsorbent which is nontoxic and inert to blood and which selectively binds the pathogen while the blood passes the adsorbent; and thereafter detecting the adsorbed pathogen while still culturable.

16. Process for detecting the presence of a pathogen selected from the group consisting of bacteria, fungi and viruses, in blood, as a means of early medical diagnosis of sepsis which comprises,

extracorporeally circulating blood under investigation in the presence of an anticoagulant through a bed of a sterile particulate material which is nontoxic and inert to blood and effective to selectively bind a pathogen in the blood while the blood passes the adsorbent,

permitting said material to bind any pathogen in the blood, recovering the material with any pathogen found or immobilized thereon while the pathogen is still culturable, and

analyzing the material to detect any bound or immobilized pathogen.

4,543,329
PROCESS FOR THE SPECIFIC CLEAVAGE OF PROTEIN SEQUENCES FROM PROTEINS

Joachim Daum; Gerhard Siewert; Michael Töpert, all of Berlin, and Hartmut Seliger, Ulm-Lehr, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 154,196, May 29, 1980, abandoned. This application Jul. 6, 1982, Ser. No. 395,433

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922496; Mar. 27, 1980, 3012170; Mar. 27, 1980, 3012169

Int. Cl.⁴ C12P *21/06, 21/02;* C12N *15/00*

U.S. Cl. 435—69 **23 Claims**

1. In a process for selectively cleaving a fusion protein produced from a genetically engineered microorganism containing a foreign gene, the fusion protein comprising native protein segment and foreign protein and the cleavage selectively occurring between the native and foreign protein the improvement comprising incorporating the tetrapeptide sequence Pro-Xyz-Gly-Pro between the native and foreign protein, wherein Xyz can be any natural amino acid and its carboxy end is attached to the amino end of Gly, and reacting the fusion protein with a collagenase whereby said Xyz-Gly bond is selectively cleaved, thereby producing a foreign protein with the sequence Gly-Pro at its N-terminal end.

4,543,330
PROCESS FOR THE PRODUCTION OF A FERMENTATION STARTING MATERIAL

Hideyuki Morimoto, Yokohama; Masaru Saeki, Fujisawa, and Tetsuya Kawakita, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jan. 3, 1984, Ser. No. 567,673

Claims priority, application Japan, Nov. 10, 1982, 57-197139; Nov. 10, 1982, 57-197138

Int. Cl.⁴ C12P *13/14*

U.S. Cl. 435—110 **11 Claims**

1. A process for the production of L-glutamic acid by fermentation, which comprises growing an L-glutamic-acid-producing microorganism in a fermentation medium containing as a carbon source a treated molasses product produced by a process which comprises a step (1) of adding an invertase or a mineral acid to cane molasses and keeping said cane molasses to which the invertase or the mineral acid has been added at a temperature and a pH suitable for inversion for a time required for almost all the amount of the sugar contained in said cane molasses to be inverted, a step (2) of passing said cane molasses treated with the invertase or the mineral acid after the step (1) through a column packed with a cation form cation exchange resin and subsequently passaging water having a pH in the range of 5–8 in an amount enough to elute 97% or more of the invert sugar through said resin column, and a step (3) of obtaining an eluate fraction containing the invert sugar after the step (2) as the carbon source.

4,543,331

FERMENTATIVE OR ENZYMATIC PRODUCTION OF 2-KETO-L-GULONIC ACID

Takayasu Sonoyama; Shigeo Yagi, and Bunji Kageyama, all of Osaka, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Feb. 25, 1983, Ser. No. 469,780
Claims priority, application Japan, Mar. 5, 1982, 57-35452; Mar. 5, 1982, 57-35453; Mar. 5, 1982, 57-35454
Int. Cl.[4] C12P 7/60
U.S. Cl. 435—138 24 Claims

1. In a process for preparing 2-keto-L-gulonic acid from 2,5-diketo-D-gluconic acid in the presence of a living or processed microorganism capable of producing 2-keto-L-gulonic acid, an improvement which comprises use of a mutant (1) substantially defective in metabolizing 5-keto-D-gluconic acid and (2) substantially incapable of producing 2-keto-D-gluconic acid.

21. A mutant characterized in that it is substantially defective in metabolizing 5-keto-D-gluconic acid and substantially incapable of producing 2-keto-D-gluconic acid, which has been derived from a parent, a 2-keto-L-gulonic acid producing microorganism which belongs to Coryneform Group of Bacteria.

4,543,332

METHOD FOR THE PREPARATION OF SPHERICAL MICROORGANISM CELL AGGREGATES

Yun C. Jao, Elkhart, and Ivan C. Good, Goshen, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 362,618, Mar. 29, 1982, abandoned. This application Feb. 24, 1983, Ser. No. 467,851
Int. Cl.[4] C12N 11/02, 11/08, 11/04, 9/90
U.S. Cl. 435—180 14 Claims

1. A method for production of spherically shaped bacterial cell aggregates which comprises the steps of:

(a) providing an aqueous medium containing viable cells of an enzyme producing microorganism;

(b) introducing a cross-linked polyamine which is the reaction product of a long chain, polyamine, cationic flocculating agent which is an epihalohydrin/polyamine copolymer and a cross-linking agent for said flocculating agent to the aqueous medium to flocculate the cells and form a cell/cross-linked polyamine aggregate;

(c) removing the aggregate from the aqueous medium by sufficient filtration to form a filter cake containing 68 to 76 weight percent water;

(d) grinding the filter cake into particles no greater than 60 mesh;

(e) extruding the filter cake through an orifice, which is approximately the diameter of the spherically shaped cell aggregate to be produced, onto the rotating plate of a spheronizing device which comprises a milled friction plate as rotor situated in a cylinder such that the cylinder provides a stationary side wall for the plate while allowing it freedom to rotate;

(f) rotating the plate at a tangential velocity of 4.5 to 12 meters per second for a time sufficient to cause the extruded aggregate to be disposed against the cylinder wall and be shaped into discrete spherical particles of the cell aggregate; and

(g) recovering the spherical particles from the spheronizing device.

4,543,333

LIQUID PROTEINASE CONCENTRATE AND METHOD FOR PREPARATION

Jens H. Eilertsen, Virum; Arne D. Fog, Birkerod, and Keith Gibson, Bagsvaerd, all of Denmark, assignors to Novo Industri A/S, Denmark

Filed Jun. 5, 1984, Ser. No. 617,533
Int. Cl.[4] C11D 3/20, 3/32, 3/386; C12N 9/54
U.S. Cl. 435—188 6 Claims

1. A liquid enzyme concentrate comprising:

the proteinase of *Subtilisin Carlsberg* in concentration of from 0.5–6.5 Anson Units per gram of concentrate;

propylene glycol in an amount of 60–85% and water in an amount of 10–35% by wt.;

calcium ion in concentration of about 0.04–0.5% by wt.;

acetamide in concentration of about 0.1–1.0 mol/kg, the pH being in the range of 5–8.

4,543,334

STREPTOMYCES CAPABLE OF PRODUCING NEUTRAL MACROLIDE ANTIBACTERIAL AGENTS

Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Hiroshi Maeda, Aichi, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,784
Int. Cl.[4] C12N 1/20; C12R 1/465; C12P 19/62; C07J 00/00
U.S. Cl. 435—253 1 Claim

1. A biologically pure culture of the microorganism *Streptomyces toyocaensis* subsp. *humicola* Huang subsp. nov. ATCC 39471, said culture being capable of producing neutral macrolides which have a keto sugar and contain a 2-hydroxyisovaleryl moiety in their structure, in a recoverable quantity, upon cultivation in an aqueous nutrient medium containing assimilable sources of nitrogen and carbon.

4,543,335

DEVICE AND METHOD FOR THE QUANTITATIVE DETERMINATION OF HEPARIN IN MAMMALIAN BLOOD PLASMA

Ronald G. Sommer, and Alfred C. Greenquist, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 20, 1982, Ser. No. 450,984
Int. Cl.[4] G01N 33/48
U.S. Cl. 436—69 15 Claims

10. A three layer test device suitable for the quantitative determination of heparin in mammalian blood plasma which comprises:

i. a first upper layer of a carrier matrix material containing a buffer, AT-III and thrombin;

ii. a second layer adjacent to and in contact with the first layer said second layer comprising a carrier matrix containing a thrombin sensitive fluorogenic or chromogenic substrate and a buffer said substrate being capable of interacting with thrombin in such a manner that a time-related chemical change detectable by fluorometric or spectrophotometric means takes place when thrombin and the substrate are contacted in a suitable liquid environment; and

iii. a third layer of a water impermeable material beneath the second layer.

15. A method for the quantitative determination of heparin in mammalian blood plasma which comprises:

(a) contacting mammalian blood plasma with the device described in claim 10;

(b) monitoring any chemical change in the substrate by reflectance spectrofluorometric or reflectance spectrophotometric means repeatedly over a period of time to obtain at least 2 spectrofluorometric or spectrophotometric values as a function of time; and

(c) comparing the relationship between the values obtained in step (b) with values obtained in a like-manner using plasma samples containing known amounts of heparin and

using such comparison to determine the concentration of heparin in the plasma sample being tested.

4,543,336

INDICATOR FOR DETERMINING SULFUR DIOXIDE

Bernhard Westrup, Lubeck, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,193

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3204938

Int. Cl.⁴ G01N *31/22, 33/52*

U.S. Cl. 436—122 **10 Claims**

1. Indicator for determining the presence of sulfur dioxide, comprising a nitroprusside, a hygroscopic substance, and an addition of an N,N,N,N-tetra-substituted ammonium salt for providing high sensitivity and simultaneously stability against moisture for the indicator, the N-substituents of the ammonium salt being selected from the group consisting of alkyl and aryl radicals.

4,543,337

STABILIZER FOR UREA NITROGEN COLOR REAGENT

Sigrid G. Klotzsch, Irvington, and Richard Vadaszy, Valley Cottage, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,145

Int. Cl.⁴ G01N *33/62*

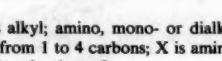
U.S. Cl. 436—108 **8 Claims**

1. A storage stable diagnostic reagent solution useful for the colorimetric determination of urea nitrogen in a urea-containing sample characterized by enhanced sensitivity and linearity which comprises

(a) from about 0.02% to about 5.0% w/v of a chromogenic agent;

(b) from about 0.001% to about 0.2% w/v of a color enhancer; and

(c) an effective amount of up to about 0.5% w/v of a cyanothioamine of the formula:



wherein R is alkyl; amino, mono- or dialkylamino, said alkyl having from 1 to 4 carbons; X is amino; n is 0, 1 or 2; and the thio salts thereof.

4,543,338

WIPE-OFF TEST DEVICE

Shuenn-tzong Chen, Irvine, Calif., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 3, 1983, Ser. No. 500,976

Int. Cl.⁴ G01N *33/52, 21/78*

U.S. Cl. 436—170 **9 Claims**

1. A test device for determining the presence of a substance in a test sample comprising a carrier matrix having an upper and lower layer, the lower layer being affixed to a support member; in which the upper layer is porous to water, but impermeable to proteins and colored pigment contained in the test sample, and the lower layer comprises a reagent system capable of producing a detectable response in the presence of the substance; the improvement wherein the upper layer consists essentially of a partially crosslinked polymer of gelatin, agarose, alginic acid, a salt of alginic acid, or mixtures thereof.

4. A method for determining the presence of a substance in a test sample, the method comprising the steps of

contacting the test device of claim 1 with a test sample,

thereafter wiping the upper layer free of test sample residue, and

observing a detectable response.

4,543,339

EARLY PREGNANCY DETECTION BY DETECTING ENHANCED BLOOD PLATELET ACTIVATION

Christopher O'Neill, Flat 1, 83 St. Johns Rd., Glebe 2037, N.S.W., Australia

Filed Mar. 15, 1983, Ser. No. 475,546

Claims priority, application Australia, Mar. 16, 1982, PF3148

Int. Cl.⁴ G01N *33/48, 33/50, 33/54*

U.S. Cl. 436—510 **15 Claims**

1. A method of detecting pregnancy in a mammal at an early stage shortly following conception which comprises detecting enhanced activation of blood platelets.

15. A system for detecting pregnancy in a mammal at an early stage by platelet adhesion, which comprises:

(a) a substrate of a glass or plastics material,

(b) a fixative for fixing adherent platelets to the substrate,

(c) a labelled antibody to detect the presence of platelets adhering to the substrate, and

(d) a macromolecular source to prevent non-pregnancy specific binding to the substrate.

4,543,340

RADIOIMMUNOASSAY OF THYMOSIN β_4

Allan L. Goldstein, Washington, D.C.; Teresa L. K. Low, Annandale, Va.; John McClure, Houston, Tex., and Paul H. Naylor, Bowie, Md., assignors to George Washington University, Washington, D.C.

Filed Apr. 7, 1983, Ser. No. 482,384

Int. Cl.⁴ G01N *33/56;* **A61K** *39/00;* **C07G** *7/00;* **C07C** *103/52*

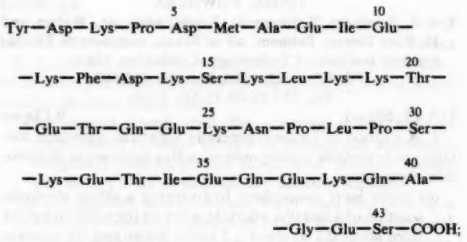
U.S. Cl. 436—542 **14 Claims**

2. A radioactive tracer useful in assaying for thymosin β_4 comprising a polypeptide selected from the group consisting of:

(a) Tyr-C13-thymosin β_4, having the following amino acid sequence:

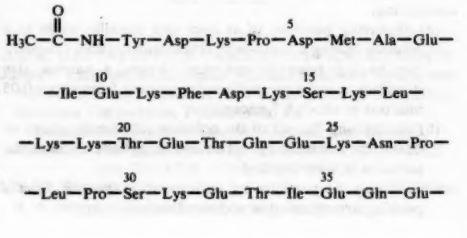
Tyr-Lys-Glu-Thr-Ile-Glu-Gln-Glu-Lys-Gln-Ala-Gly-Glu-Ser-COOH;

(b) (Tyr^1)-desacetyl thymosin β_4 having the following amino acid sequence:



and

(c) (Tyr^1)-thymosin β_4 having the following amino acid sequence:



-continued

$$-Lys-Gln-\overset{40}{Ala}-Gly-Glu-\overset{43}{Ser}-COOH$$

said polypeptide being bound to or incorporating a radioisotope.

6. A radioimmunoassay for thymosin β_4 in a sample which comprises:

(a) incubating the sample with a known amount of radioactive tracer and an antibody which will selectively complex with thymosin β_4 or said radioactive tracer;

(b) separating the resulting antibody-antigen complex from uncomplexed radioactive tracer;

(c) measuring the degree of binding of the radioactive tracer in said complex; and

(d) determining the amount of thymosin β_4 present in said sample by comparing the degree of binding to a standard curve;

wherein the thymosin β_4 polypeptide has the following amino acid sequence:

$$H_3C-\overset{O}{\overset{\|}{C}}-NH-Ser-Asp-Lys-Pro-\overset{5}{Asp}-Met-Ala-Glu-$$

$$-Ile-\overset{10}{Glu}-Lys-Phe-Asp-Lys-\overset{15}{Ser}-Lys-Leu-$$

$$-Lys-Lys-\overset{20}{Thr}-Glu-Thr-Gln-Glu-\overset{25}{Lys}-Asn-Pro-$$

$$-Leu-Pro-\overset{30}{Ser}-Lys-Glu-Thr-\overset{35}{Ile}-Glu-Gln-Glu-$$

$$-Lys-Gln-\overset{40}{Ala}-Gly-Glu-\overset{43}{Ser}-COOH$$

and a radioactive tracer of claim 2.

4,543,341

SYNTHESIS AND PROCESSING OF MONOSIZED OXIDE POWDERS

Eric A. Barringer, Waltham; M. Bruce Fegley, Jr., Waban, and H. Kent Bowen, Belmont, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 23, 1983, Ser. No. 565,000

Int. Cl.[4] C04B *35/00, 35/46*

U.S. Cl. 501—1 **9 Claims**

1. A method of forming generally spherical, sinterable metallic oxide metallic oxide powders with a narrow size distribution comprising:

(a) under inert atmosphere hydrolyzing a dilute alcoholic solution of a metallic alkoxide wherein the solution ranges from about 0.2 to about 1.5 molar water and the concentration of the alkoxide ranges from about 0.03 to 0.2 molar alkoxide; and

(b) collecting the precipitate.

8. A method of forming sinterable compacts which yield uniformly dense ceramic structures upon sintering, the method comprising:

(a) dispersing particles of at least one metallic oxide in a solution having a low electrolyte concentration, the particles having generally spherical shapes, a narrow size distribution and a mean diameter ranging from about 0.05 microns to about 0.7 microns;

(b) maintaining the pH of the solution sufficiently above or below the isoelectric point to avoid agglomeration of the particles in solution; and

(c) forming the particles by sedimentation into an orderly packing arrangement in a desired shape.

4,543,342

SINGLE-CRYSTALLINE JEWELRY MATERIAL BASED ON ALUMINIUM GARNETS

Ashot G. Petrosian, Aboviana, 39, kv. 16; Armen S. Kuzanian, Moskovskaya, 31, kv. 14; Karine L. Ovanesian, Tamaniana, 3, kv. 59; Tatyana I. Butaeva, Charentsa, 27, kv. 3, all of Erevan; Grigory O. Shirinian, dom 8, kv. 2, Ashtarak-2, Nauchny gorodok IFI, and Ashot A. Avetisian, Ulitsatu-Barekamutian, 1, pik, 14, kv. 34, Erevan, all of U.S.S.R.

PCT No. PCT/SU82/00011, § 371 Date Oct. 24, 1983, § 102(e) Date Oct. 24, 1983, PCT Pub. No. WO83/02963, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 26, 1982, Ser. No. 552,122

Int. Cl.[4] C01F *17/00;* **C04B** *35/50*

U.S. Cl. 501—86 **9 Claims**

1. A single crystalline aluminum garnet material consisting of $Re_3Al_5O_{12}$, wherein Re is an element from the group consisting of yttrium, dysprosium, holmium, erbium, thulium and lutecium, and two dyeing additives, the first which is an element from the group consisting of europium in an amount of 10^{-3} to 3% by weight and ytterbium in an amount of 0.1 to 61.3% by weight and the second of which is an element from the group consisting of zirconium in an amount from 10^{-4} to 1% by weight, silicon in an amount of from 10^{-4} to 1% by weight and hafnium in amount of from 10^{-3} to 3% by weight.

4,543,343

CERAMICS FOR CUTTING TOOLS

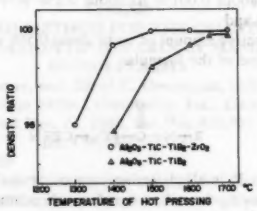
Yusuke Iyori, Fukaya, and Norio Takahashi, Omiya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Feb. 28, 1984, Ser. No. 584,446

Claims priority, application Japan, Jun. 30, 1983, 58-118480

Int. Cl.[4] C04B *35/10, 35/46, 35/56*

U.S. Cl. 501—87 **4 Claims**



1. A ceramic material for cutting tools comprising 10 to 40% by weight in total of titanium boride (TiB_2) and titanium carbide (TiC) with the weight ratio of titanium boride to the titanium carbide being in the range of from 0.15 to 6.0, and 0.5 to 10% by weight of zirconia (ZrO_2), the balance being alumina (Al_2O_3) and incidental impurities.

4,543,344

SILICON NITRIDE-CONTAINING CERAMIC MATERIAL PREPARED BY PYROLYSIS OF HYDROSILAZANE POLYMERS FROM $(R_3SI)_2NH$ AND $HSICL_3$

John P. Cannady, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 555,755, Nov. 28, 1983,. This application Jan. 7, 1985, Ser. No. 689,258

Int. Cl.[4] C04B *35/58*

U.S. Cl. 501—92 **24 Claims**

1. A method of preparing a silicon nitride-containing ceramic material which method consists of heating a R_3SiNH-containing hydrosilazane polymer in an inert atmosphere or in a vacuum to a temperature of at least 750° C. until said R_3SiNH-containing hydrosilazane polymer is converted to a silicon nitride-containing ceramic material, said R_3SiNH-containing hydrosilazane polymer having been obtained by a

process which consisted of contacting and reacting, in an inert, essentially anhydrous atmosphere, trichlorosilane with a disilazane at a temperature in the range of 25° to 300° C. while distilling by-produced volatile products, wherein said disilazane had the general formula

$$(R_3Si)_2NH$$

where R is selected from the group consisting of vinyl, hydrogen, phenyl, and alkyl radicals containing 1 to 3 carbon atoms.

22. A silicon nitride-containing ceramic material as prepared by the method of claim 1.

4,543,345

SILICON CARBIDE WHISKER REINFORCED CERAMIC COMPOSITES AND METHOD FOR MAKING SAME

George C. Wei, Oak Ridge, Tenn., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Feb. 9, 1984, Ser. No. 578,407
Int. Cl.⁴ C04B *35/56*
U.S. Cl. 501—95 11 Claims

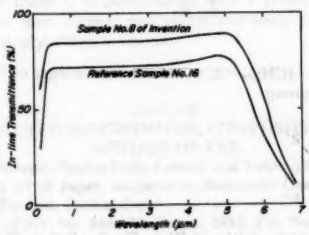
1. A ceramic composite characterized by increased toughness and resistance to fracture, comprising a composite defined by a matrix of ceramic material having homogeneously dispersed therein about 5 to 60 vol. % of silicon carbide whiskers, with said silicon carbide whiskers having a monocrystalline structure and in a size range of about 0.6 μm in diameter and a length of 10 to 80 μm, said composite being of a density greater than about 99% of the theoretical density.

4,543,346

POLYCRYSTALLINE TRANSPARENT SPINEL SINTERED BODY AND METHOD OF PRODUCING THE SAME

Minoru Matsui, and Tomonori Takahashi, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed May 26, 1983, Ser. No. 498,576
Claims priority, application Japan, Dec. 27, 1982, 57-232545
Int. Cl.⁴ C04B *35/44*
U.S. Cl. 501—120 9 Claims



1. A polycrystalline transparent spinel sintered body, consisting of Al_2O_3 and MgO in a ratio of (0.54:0.46) to (0.58:0.42), said sintered body having an in-line transmittance of at least 77% for a 1 mm thickness at a light wavelength of 0.6 μm.

4,543,347

CATALYST COMPOSITION FOR CONVERSION OF SYNTHESIS GAS TO HYDROCARBONS

Malcolm P. Heyward, Camberley, and Dennis Young, Staines, both of England, assignors to The British Petroleum p.l.c., London, England

Filed Mar. 26, 1984, Ser. No. 593,620
Claims priority, application United Kingdom, Apr. 8, 1983, 8309585
Int. Cl.⁴ B01J *29/04, 29/28*
U.S. Cl. 502—61 8 Claims

1. A catalyst composition suitable for converting synthesis gas to hydrocarbons comprising a mixture of zinc oxide, an oxide of at least one metal selected from gallium and indium, an oxide of at least one additional metal selected from the elements of Group IB, III–V, VIB, VIIB and VIII including the Lanthanides and Actinides of the Periodic Table of Elements and a porous crystalline tectometallosilicate.

2. A catalyst composition according to claim 1 wherein the additional oxide is that of at least one metal selected from copper, scandium, yttrium, lanthanum, titanium, zirconium, hafnium, chromium, molybdenum, tungsten, manganese, rhenium, iron, ruthenium, cobalt, rhodium, iridium, nickel, palladium, platinum, cerium, terbium, uranium and thorium, boron, aluminium, silicon, germanium, tin, lead, phosphorus, antimony and bismuth.

3. A catalyst composition according to claims 1 or 2 wherein the porous tectometallosilicate has a silica to alumina ratio greater than 5:1 and is selected from those having the MFI structure type the MEL structure type, the MOR structure type, and the zeolites known as ZSM-12, ZSM-23, ZSM-35, ZSM-38 and zeolite beta.

4,543,348

MANUFACTURE OF ELECTRODES WITH LEAD BASE

Henri B. Beer, Heide Kalmthout, Belgium; Jean M. Hinden, Chambesy, Switzerland; Mark R. Honard; Jeries I. Bishara, both of Mentor, Ohio, and Joseph K. Walker, Jr., Beachwood, Ohio, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Filed Feb. 16, 1983, Ser. No. 467,157
Claims priority, application European Pat. Off., Feb. 18, 1982, 82810076.8
Int. Cl.⁴ H01M *4/88;* C25B *11/00*
U.S. Cl. 502—101 7 Claims

1. A process for the manufacture of a catalytic, lead electrode having an inactive base of lead or lead alloy and an active catalyst thereon, comprising;

(a) producing a preformed, flat, coherent, porous body of consolidated titanium sponge by compacting assembled, irregularly shaped, porous particles of titanium sponge into such a body of substantially uniform thickness;

(b) impregnating said preformed body from step (a) with a solution containing a precursor of said active catalyst, and heat treating the impregnated body to convert the precursor to said catalyst; and

(c) pressing the active catalyst containing, preformed body produced in step (b) onto a base of lead or lead alloy, thereby fixing and firmly anchoring said body to said base.

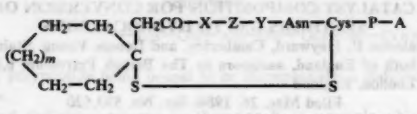
4,543,349

BASIC HEPTAPEPTIDE VASOPRESSIN ANTAGONISTS

James F. Callahan, Philadelphia; Michael L. Moore, Media, and Nelson C. Yim, Ambler, all of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

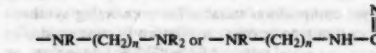
Continuation-in-part of Ser. No. 535,000, Sep. 22, 1983, abandoned. This application Aug. 28, 1984, Ser. No. 645,127
Int. Cl.⁴ A61K *37/00;* C07C *103/52*
U.S. Cl. 514—11 23 Claims

1. A polypeptide compound having the formula:



in which:

A is



Z is Phe, Phe(4'-Alk) or Tyr(Alk);

X is D-Phe, D-Phe(4'-Alk), D-Val, D-Nva, D-Leu, D-Ile, D-Pba, D-Nle, D-Cha, D-Abu, D-Met, D-Chg, D-Tyr, L-Tyr, D-Tyr(Alk) or L-Tyr(Alk);

P is D-Pro, L-Pro, Δ^3-Pro, L-Ala, L-N-MeAla, Gly, Sar or a single bond;

Y is Val, Ile, Abu, Ala, Chg, Gln, Lys, Cha, Nle, Phe, Leu or Gly;

R is, in each case, hydrogen or C_{1-5}-alkyl;

n is an integer from 2–8; and

m is an integer from 0–2; or a pharmaceutically acceptable, acid addition salt thereof.

4,543,350

CARCINOSTATIC AGENT

Tatsuhei Kondo, Nagoya; Noboru Takabe, Toyohashi, and Takeshi Horiba, Aichi, all of Japan, assignors to Sanyo Machine Works, Ltd., Aichi, Japan

Filed Jul. 21, 1983, Ser. No. 515,602

Claims priority, application Japan, Nov. 9, 1982, 57-196304

Int. Cl.⁴ C07C *103/52;* **A61K** *37/00;* **C12P** *21/00, 21/02;* **C12R** *1/89*

U.S. Cl. 514—18 **7 Claims**

1. An immunopotentiating carcinostatic composition in pharmaceutical form, comprising Eisenin (tripeptide) of the general formula:

L-Pyrolgu-L-Gln-L-Ala

wherein Pyroglu, Gln and Ala represent pyroglutamic acid, glutamine and alanine, respectively, and a pharmaceutically acceptable carrier or excipient to form an injectable solution, a tablet, an ointment, or a suppository.

4,543,351

SPIRONOLACTONE CONTAINING COMPOSITION FOR COMBATTING ACNE

Michele Messina, Turin, Italy, assignor to Schiapparelli Farmaceutici S.p.A., Turin, Italy

Filed Mar. 27, 1984, Ser. No. 593,926

Claims priority, application Italy, Apr. 1, 1983, 20435 A/83

Int. Cl.⁴ A61K *31/58*

U.S. Cl. 514—175 **3 Claims**

1. A topical composition comprising:

A. from 0.1 to 10 weight percent of spironolactone as the active ingredient;

B. from 10 to 25 weight percent of a mixed polyethylene glycol and polyoxyethylene glycol ester of a higher saturated fatty acid;

C. from 2 to 10 weight percent of a saturated polyoxyethylene glycol glyceride; and

D. from 60 to 75 weight percent of water.

4,543,352

NAPHTHALENE AMINOALKYLENE ETHERS AND THIOETHERS, AND THEIR PHARMACEUTICAL USES

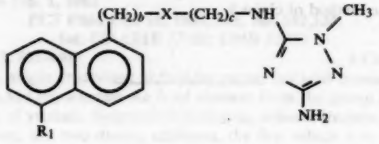
Donald E. Kuhla, Doylestown; Henry F. Campbell, Lansdale, and William L. Studt, Harleysville, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Apr. 29, 1983, Ser. No. 489,814

Int. Cl.⁴ A61K *31/415, 31/445;* **C07D** *249/14, 401/12*

U.S. Cl. 514—212 **5 Claims**

1. A compound of the formula



wherein:

b is 0 or 1;

c is 2, 3, or 4;

X is oxygen or sulfur;

R_1 is $—NR_2R_3$;

R_2 and R_3 together with the nitrogen to which they are attached form a heterocyclic ring of the formula $—N(CH_2)_d$, where d is 4, 5 or 6, morpholinyl, pyrrolyl, imidazolyl, pyrazolyl or thiamorpholinyl; or a pharmaceutically acceptable salt thereof.

5. A pharmaceutical composition wherein the active ingredient is an effective H_2-antagonist amount of a compound according to claim 1 in admixture with a pharmaceutical carrier.

4,543,353

ESTER AND AMIDE DERIVATIVES OF 13,14-DIDEHYDRO PROSTAGLANDINS

Franco Faustini, Milan; Vittoria Villa, Briosco; Carmelo Gandolfi, Milan, and Enrico Di Salle, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

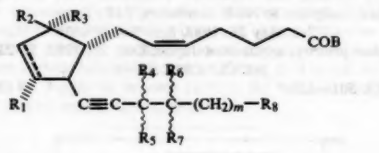
Filed Oct. 25, 1982, Ser. No. 436,419

Claims priority, application United Kingdom, Nov. 27, 1981, 8135799

Int. Cl.⁴ C07C *177/00;* **A61K** *31/557*

U.S. Cl. 514—236 **7 Claims**

1. Optically active or racemic prostaglandin derivatives of Formula (I)



(I)

wherein

R is $—O—(CH_2)_n—Z$, wherein n is an integer of 2 to 4 and Z is a group

wherein each of R′ and R″ is C_1–C_6 alkyl or R′ and R″, taken together with the nitrogen atom to which they are linked, form a ring chosen from imidazolidinyl, piperidino, piperazinyl and morpholino or Z is a group —OR‴, wherein R‴ is C_1–C_6 alkyl;

the symbol represents a single bond, R_1 is hydroxy, R_2

is hydrogen and R_3 is hydroxy, benzoyloxy or C_2–C_6 alkanoyloxy, or R_2 and R_3, taken together, form an oxo group; or the symbol represents a double bond, R_1 is hydrogen and R_2 and R_3, taken together, form an oxo group, one of R_4 and R_5 is hydroxy and the other is hydrogen; each of R_6 and R_7 is, independently, hydrogen, C_1–C_4 alkyl or fluorine;

m is zero, 1 or 2;

R_8 is cyclopentyl, cyclohexyl or cycloheptyl, and the pharmaceutically or veterinarily acceptable salts thereof.

4,543,354
ANTI-HYPERTENSIVE 9-AMINOMETHYL-BENZO[f]QUINOLINE-3,10-DIONE DERIVATIVES

Toru Nakao; Tsuguo Ikebe; Tetsuya Tahara; Yutaka Maruyama, all of Oita, and Osamu Yaoka, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

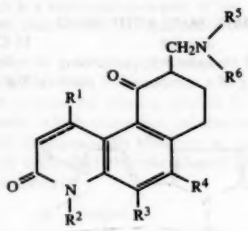
Filed Nov. 10, 1983, Ser. No. 550,423

Claims priority, application PCT Int'l Appl., Nov. 10, 1982, PCT/JP82/00438

Int. Cl.⁴ A61K *31/47*; G07D *221/10*

U.S. Cl. 514—238 **11 Claims**

1. A benzo[f]quinoline derivative of the formula:



wherein R^1 is hydrogen or lower alkyl, R^2 is hydrogen, lower alkyl, hydroxy-lower-alkyl or lower-alkoxy-lower-alkyl, R^3 and R^4 are the same or different and each is hydrogen, lower alkyl, halogen, lower alkoxy, benzyloxy or hydroxy, R^5 and R^6 are the same or different and each is hydrogen, straight or branched C_{1-10} alkyl, pheny-C_{1-4} alkyl or C_{5-6} eycloalkyl, or R^5 and R^6 together with the adjacent nitrogen atom form a pyrrolidine, piperidine, morpholine, N'-methylpiperazine, or 6,7-dimethyl-1,2,3,4,-tetrahydroisoquinoline, and the dotted line in the ring is an optional bond between the 1- and 2-positions, or a pharmaceutically acceptable acid addition salt thereof.

11. An antihypertensive composition comprising a compound of claim 1 in combination with a pharmaceutically acceptable inert carrier, said compound being present in a therapeutically effective amount.

4,543,355
SUBSTITUTED SUCCINIMIDES, COMPOSITIONS AND METHOD OF USE

Kikuo Ishizumi, Osaka; Fujio Antoku, and Yukio Asami, both of Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

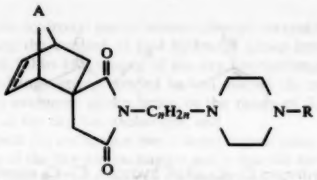
Division of Ser. No. 446,047, Dec. 1, 1982, Pat. No. 4,507,303. This application Jan. 8, 1985, Ser. No. 689,776

Claims priority, application Japan, Dec. 22, 1981, 56-208379; Jun. 3, 1982, 57-95763

Int. Cl.⁴ A61K *31/505*; C07D *403/04, 403/14*

U.S. Cl. 514—253 **23 Claims**

1. A succinimide derivative of the formula:



wherein A is an oxygen atom, a methylene group, or an ethylene group and a full line accompanying a broken line (⁻⁻⁻⁻⁻) is a single bond or a double bond, R is a phenyl group, optionally substituted with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy or trifluoromethyl, a 2-pyridyl group or a 2-pyrimidinyl group and n is an integer of 3 or 4, or a pharmaceutically acceptable acid addition salt thereof.

14. A pharmaceutical composition which comprises as an active ingredient a pharmaceutically effective amount of at least one of the compounds claimed in claim 1, and at least one pharmaceutically acceptable inert carrier or diluent.

4,543,356
QUINAZOLINE DERIVATIVES

Ikuo Ueda, Toyonaka; Masayuki Kato, Minoo, and Masanobu Nagano, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

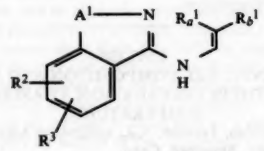
Division of Ser. No. 210,340, Nov. 25, 1980, Pat. No. 4,377,580. This application Jan. 3, 1983, Ser. No. 455,411

Claims priority, application United Kingdom, Dec. 3, 1979, 7941607; Oct. 3, 1980, 8031965

Int. Cl.⁴ A61K *31/505*; C07D *239/80, 239/94*

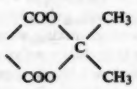
U.S. Cl. 514—259 **6 Claims**

1. A compound of the formula:



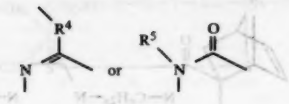
wherein

R_a^1 and R_b^1 are C_2–C_7 alkoxycarbonyl or R_a^1 and R_b^1 is linked together to form a group of the formula:



R^2 and R^3 are hydrogen, C_1–C_6 alkyl, halogen, nitro, amino, C_1–C_6 alkoxy, phenoxy, C_1–C_6 alkylthio, C_1–C_6 alkylpiperazinyl, C_1–C_{18} alkanoylamino, di(C_1–C_6)alkanoylamino, C_3–C_9 alkoxalylamino, C_4–C_8 cycloalkylcarbonylamino, C_3–C_7 cycloalkyl(C_1–C_6)alkanoylamino, benzamido, phenyl(C_1–C_6)alkanoylamino, C_1–C_6 alkylsulfonylamino or di(C_1–C_6)alkylamino which may be substituted with hydroxy,

A^1 is a group of the formula:



in which

R^4 is hydrogen C_1–C_6 alkyl, hydroxy, C_1–C_6 alkoxy, C_2–C_6 alkenyloxy, di(C_1–C_6)alkylamino or 2,2-di(C_1–C_6)alkoxycarbonylvinylamino, and

R^5 is C_1–C_6 alkyl or C_2–C_6 alkenyl,

or pharmaceutically acceptable salt thereof.

6. An anti-allergic pharmaceutical composition comprising an effective amount of the compound of claim **1** in association with a non-toxic, pharmaceutically acceptable carrier or excipient.

4,543,357

3-TRICHLOROMETHYL-5-SUBSTITUTED-1,2,4-THIADIAZOLES AS RUMINANT ANIMAL GROWTH PROMOTERS

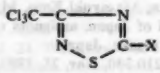
Dorothy J. Phillips, Norwood, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 27, 1983, Ser. No. 565,992

Int. Cl.⁴ A61K *31/425*

U.S. Cl. 514—361 **9 Claims**

1. A method for improving the efficiency of rumen fermentation in ruminant animals which comprises administering to said animals a compound corresponding to the formula:



or a physiologically acceptable salt thereof wherein X is selected from the group consisting of chloro, NH_2, NHR, NR_2, OR and SR where R is a straight or branched chain alkyl moiety of 1 to about 4 carbon atoms inclusive; said compound or physiologically acceptable salt thereof administered to said animals in an amount sufficient to improve the efficiency of said rumen fermentation.

4,543,358

ANTHELMINTIC GEL COMPOSITION AND A METHOD FOR THEIR PREPARATION AT AMBIENT TEMPERATURES

James M. Quinlan, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 449,067, Dec. 13, 1982, abandoned. This application Aug. 26, 1983, Ser. No. 513,782

Int. Cl.⁴ A61K *31/425*

U.S. Cl. 514—368 **19 Claims**

1. A method for the preparation, at ambient temperatures, of clear aqueous homogeneous gels characterized by subzero gelation points, comprising, mixing about 15–50% by weight of the gellant α-hydro-Ω-hydroxy-poly(oxyethylene)poly(oxypropylene)poly(oxyethylene) block copolymer, average molecular weight 12,500; mp 56° C., Brookfield viscosity of 3100 at 77° C.; surface tension of a 0.1% aqueous solution: 40.6 dynes/cm (measured with a du Nouy tensiometer) with 14–31% by weight of propylene glycol, 0–41% by weight of one or more active ingredients, and admixing the thus formed mixture with about 30–50% by weight of water and stirring the resulting mixture at ambient temperatures (20°–60° C.) without additional heating or cooling, until it is homogeneous at atmospheric pressure or under reduced pressure of from 10–100 mm Hg.

12. A composition according to claim **11**, wherein the anthelmintic is 1-6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole.

4,543,359

TREATING CARDIAC ARRHYTHMIAS WITH DANTROLENE SODIUM

Keith O. Ellis, and Alan F. Moore, both of Norwich, N.Y., assignors to Eaton Laboratories, Inc., Manati, P.R.

Continuation-in-part of Ser. No. 432,348, Oct. 1, 1982, abandoned. This application Sep. 27, 1983, Ser. No. 534,865

Int. Cl.⁴ A61K *31/415*

U.S. Cl. 514—390 **4 Claims**

1. A method of treating cardiac arrhythmia in hypothermic and normothermic warm-blooded animals comprising administering to an animal in need thereof an amount of dantrolene sodium effective to treat such arrhythmia.

4,543,360

2-(HYDROXY-PHENYL)-INDOLES AND PROCESS FOR THEIR PRODUCTION

Erwin von Angerer, Regenburg, and Helmut Schonenberger, Pentling, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

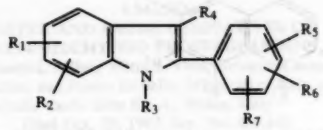
Filed Aug. 17, 1982, Ser. No. 408,898

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135841

Int. Cl.⁴ H61K *31/40;* **G07D** *209/32*

U.S. Cl. 514—415 **11 Claims**

1. A pharmaceutical composition comprising an effective amount of 10 to 150 mg of a compound of the formula:



where R_1 is hydrogen, a hydroxy group, or a C_2–C_6-alkanoyloxy group, R_2 is hydrogen, a hydroxy group, a C_2–C_6-alkanoyloxy group or a halogen atom, R_3 is a C_1–C_6 alkyl group, R_4 is hydrogen or a C_1–C_6-alkyl group, R_5 is a hydroxy group or a C_2–C_6-alkanoyloxy group, R_6 is hydrogen, a halogen atom, a hydroxy group, or a C_2–C_6-alkanoyloxy group, and R_7 is hydrogen or a halogen atom and a pharmaceutically acceptable carrier.

4,543,361

±2-[PHENETHYL]-5-[(3,4-METHYLENEDIOXY)-α-HYDROXYBENZYL]PYRROLIDINE ANTIHYPERTENSIVES AND USE THEREAS

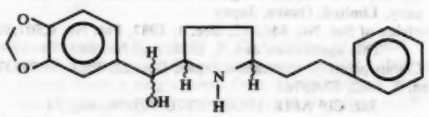
Joseph M. Muchowski; Robert Greenhouse; Jack Ackrell; Tsung-Tee Li, and Jurg R. Pfister, all of 3401 Hillview Ave., P.O. Box 10850, Palo Alto, Calif. 94303

Filed Aug. 29, 1983, Ser. No. 527,717

Int. Cl.⁴ A61K *31/40;* **C07D** *405/02*

U.S. Cl. 514—422 **9 Claims**

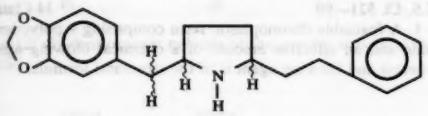
1. A compound of the formula



namely, ±2-[phenethyl]-5-[(3,4-methylenedioxy)-α-hydrox-

ybenzyl]pyrrolidine and the pharmaceutically acceptable acid addition salts thereof.

9. A method for regulating hypertension in mammals which method comprises administering to a subject in need of such treatment a therapeutically effective amount of the compound of the formula



and the pharmaceutically acceptable acid addition salts thereof.

4,543,362

P-ALKYL OR CYCLOALKYL PHENOXY ALKANOLS AND ALKANOL ESTERS AND PROCESS FOR THE TREATMENT OF ALLERGIC CONDITIONS

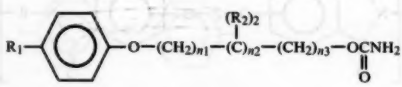
Frank M. Berger, 190 E. 72nd St., New York, N.Y. 10031; Joseph I. DeGraw, Jr., and Howard L. Johnson, both of Sunnyvale, Calif., assignors to Frank M. Berger, New York, N.Y.

Division of Ser. No. 327,141, Dec. 3, 1981, Pat. No. 4,451,474, which is a continuation-in-part of Ser. No. 114,183, Jan. 22, 1980, abandoned. This application Jan. 13, 1984, Ser. No. 550,838

Int. Cl.[4] A61K *31/27*

U.S. Cl. 514—480 7 Claims

1. A process for treating animals in need of antihistaminic treatment which comprises administering to the animal an amount therapeutically effective as an antihistamine of a p-alkyl or cycloalkyl phenoxy alkanol carbamic acid ester having the formula:



in which:

R_1 is an alkyl group having from one to six carbon atoms, or a bivalent cycloalkylene group having from five to seven ring carbon atoms and condensed with the phenyl group at adjacent ring carbons thereof that the cycloalkylene and phenyl rings share in common;

R_2 is lower alkyl having from one to three carbon atoms or hydrogen;

n_1, n_2 and n_3 represent the number of CH_2, $C(R_2)_2$ and CH_2 groups, respectively, and are numbers within the range from 0 to 10; and at least one of n_1, n_2 and n_3 is other than zero.

4,543,363

ION EXCHANGER HAVING HYDROXYL GROUPS BONDED DIRECTLY TO BACKBONE SKELETON

Yuzo Yanagihara, Yokohama, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 7, 1984, Ser. No. 618,449

Claims priority, application Japan, Jun. 15, 1983, 58-105942; Jan. 17, 1984, 59-6058; Jan. 20, 1984, 59-8261

Int. Cl.[4] B01J *1/08*; C08F *5/20*

U.S. Cl. 521—38 19 Claims

1. An ion exchanger which comprises:

a matrix comprising a backbone structure and functional groups bonded to said backbone structure, said matrix being a totally porous organic synthetic crosslinked copolymer of vinyl compound monomer units and crosslinkable monomer units;

an alcoholic hydroxyl group bonded directly to said backbone structure, the content of said hydroxyl group being in the range of 1.0 to 14.0 meq/g of the dry ion exchanger; and

an ion exchange group bonded to said matrix, the content of said ion exchange group being in the range of 0.02 to 5.0 meq/g of the dry ion exchanger, and

wherein said ion exchanger has a water regain value of 0.5 to 4.0 g/g of the dry ion exchanger and a specific surface area of 5 to 1000 m^2/g of the dry ion exchanger.

4,543,364

RECOVERY OF POLYETHYLENE TEREPHTHALATE (PET)

Robert J. Nankee; Thomas A. Vivian, and Kenneth O. Groves, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 13, 1984, Ser. No. 681,354

Int. Cl.[4] C08J *11/04*

U.S. Cl. 521—40 12 Claims

1. A process of recovering clear polyethylene terephthalate (PET) resin in particulate form substantially free from contaminating glue and paper which comprises: contacting glue- and paper-contaminated PET particles with a sufficient quantity of a chlorinated solvent to dissolve the glue from the PET and separating the solvent from the particles.

4,543,365

METHOD FOR INCREASING THE POROSITY OF A CROSS-LINKED COPOLYMER

Takaharu Itagaki, Yokohama; Tsuyoshi Ito; Kiyoto Ando, both of Machida, and Hiromi Teshima, Yamato, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Jan. 24, 1985, Ser. No. 694,276

Claims priority, application Japan, Feb. 2, 1984, 59-17524

Int. Cl.[4] C08J *9/00*

U.S. Cl. 521—53 4 Claims

1. A method for increasing the porosity of a cross-linked copolymer composed essentially of at least one monovinyl aromatic compound selected from the group consisting of styrene, vinyl toluene and ethyl vinyl benzene, at least one polyvinyl aromatic compound selected from the group consisting of divinyl benzene, trivinyl benzene, divinyl toluene and divinyl xylene, and an aliphatic vinyl compound, wherein the proportion of the polyvinyl aromatic compound relative to the total vinyl compounds is from 8 to 80% by weight, and the proportion of the aliphatic vinyl compound relative to the total vinyl compounds is from 0 to 20% by weight, which method comprises treating particles of said copolymer with a Lewis acid catalyst in an amount of from 0.05 to 1 part by weight relative to 1 part by weight of the copolymer particles, in the presence of an organic solvent.

4,543,366

SPRAYABLE URETHANE RESIN COMPOSITION AND METHOD

Stuart B. Smith, Conyers, Ga., assignor to Thermocell Development, Ltd., Knoxville, Tenn.

Continuation-in-part of Ser. No. 649,136, Sep. 10, 1984, abandoned. This application Oct. 15, 1984, Ser. No. 660,908

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—78 28 Claims

1. A process of preparing a urethane resin composition which process comprises reacting together an A mixture and a B mixture to form a fast reacting and curing urethane resin;

(a) the A side mixture comprising MDI or an MDI prepolymer prepared by the reaction of an MDI having a functionality of about 3.0 or less with a ethylene oxide-capped polypropylene oxide triol having a hydroxyl number of about 50 or less, the prepolymer having from about 18 to 25 percent free NCO groups; and

(b) a B side mixture which comprises:

(i) from about 50 to 95 parts of an auto catalytic, aromatic amine polyol;

(ii) from about 5 to 50 parts of a tetraethylene glycol; and

(iii) a small catalytic amount of an organo-metallic catalyst selected from the group consisting of tetravalent tin or lead to provide for a gel time of less than 15 minutes.

4,543,367

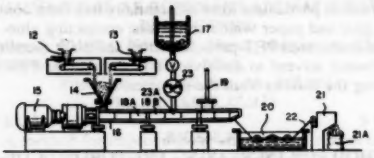
PROCESS FOR FORMING FUNCTIONAL FLUID AND SOLID-CONTAINING THERMOPLASTIC FILMS, USES THEREOF AND PROCESS FOR PRODUCING SAME

Howard J. Rutherford, Kinnelon, and Donald A. Withycombe, Lincroft, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 465,313, Feb. 9, 1983, Pat. No. 4,521,541. This application Aug. 24, 1984, Ser. No. 643,826

Int. Cl.⁴ B29D *27/00*

U.S. Cl. 521—79 **6 Claims**



1. A process for preparing a foamed polymeric article of manufacture containing a functional fluid or solid composition of matter capable of effecting the diagnosis of a physiological or psychological aberration or malfunction in mammalian species, utilizing apparatus comprising a single screw or a twin screw extruder comprising an extruder barrel, said extruder barrel having multiplicity of barrel segments, located within the extruder barrel, one or two parallel extruder screws, said extruder barrel having a first orifice at the location of a first extruder segment, a second orifice located at a second barrel segment, at least one barrel segment downstream from said first barrel segment, and a third orifice located at a third barrel segment at least one barrel segment downstream from said second barrel segment, comprising the steps of:

(i) extruding a thermoplastic resin with a volatile composition of matter capable of effecting the diagnosis of a physiological or psychological aberration or malfunction in a mammalian species which is compatible with said thermoplastic resin, by adding said thermoplastic resin at said first orifice of said extruder and adding said composition capable of effecting the diagnosis of a physiological or psychological aberration or malfunction in a mammalian species at said second orifices of said extruder, while simultaneously adding downstream from said second orifice, at said third orifice, a gasious blowing agent selected from the group consisting of nitrogen and carbon dioxide; and

(ii) then pelletizing the product so extruded,

the temperature range in the extruder being from about 160° up to about 240° C.; the feed rate of the resin being from about 80 up to about 300 lbs. per hour into the extruder; the pressure of the gaseous blowing agent at said third orifice being from about 80 up to 150 psig; the feed rate range of the composition capable of effecting the diagnosis of a physiological or psychological abberration or malfunction in a mammalian species at said second orifices being between 1 and 35 percent of the feed rate range of said resin; said thermoplastic resin being compatible with said composition of matter capable of effecting the diagnosis of a physiological or psychological aberration or malfunction in a mammalian species.

6. The product prepared according to the process of claim **1**.

4,543,368

FOAMABLE POLYETHERIMIDE RESIN FORMULATION

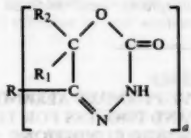
Robert W. Smearing, and Daniel E. Floryan, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 9, 1984, Ser. No. 669,859

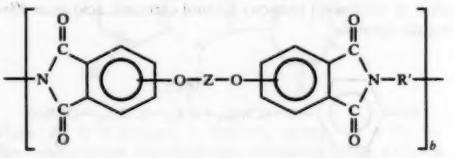
Int. Cl.⁴ C08J *9/10*

U.S. Cl. 521—90 **14 Claims**

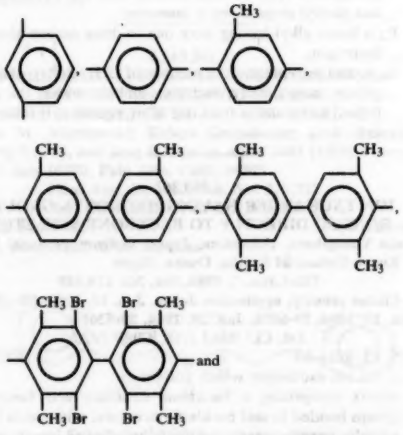
1. A foamable thermoplastic resin comprising a polyetherimide and an effective amount of a chemical blowing agent wherein and blowing agent is of the structural formula:



where "a" is an integer equal to 1 or 2, R is a monovalent radical when "a" is 1 and R is a divalent radical when "a" is 2 and R is selected from alkyl radicals and aryl radicals, alkylene radicals, arylene radicals, substituted aryl radicals or substituted arylene radicals and R_1 and R_2 are monovalent or divalent radicals which can be the same or different selected from hydrogen, alkyl, alkylene, a cyclo-aliphatic ring including R_1 and R_2 alkoxy radicals and aryloxy radicals; and wherein the polyetherimide is represented by the formula:



where "b" is an integer from 10 to 10,000, Z is a member selected from the class consisting of: (1)



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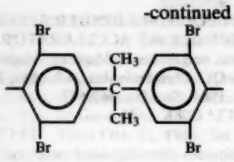
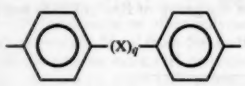
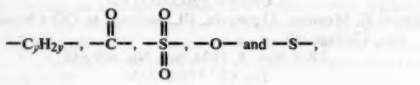


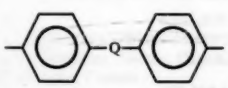
and (2) divalent organic radicals of the general structural formula:



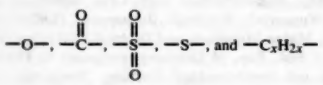
where X is a member selected from the class consisting of divalent radicals of the formulas,



where q is 0 or 1, y is an integer from 1 to 5, and the divalent bonds of the —O—Z—O— radical are situated on the phthalic anhydride end groups, e.g., in the 3,3′, 3,4′, 4,3′ or the 4,4′ positions and R′, is a divalent organic radical selected from the class consisting of aromatic hydrocarbon radicals having from 6 to about 20 carbon atoms and halogenated derivatives thereof, alkylene radicals and cycloalkylene radicals having from about 2 to about 20 carbon atoms, C(2–8) alkylene terminated polydiorganosiloxane, and divalent radicals of the formula:



where Q is a direct bond or a member selected from the class consisting of



and x is an integer from 1 to 5.

4,543,369

ALKOXYLATED POLYESTER POLYOLS AND POLYURETHANES MADE THEREFROM

Dwight E. Peerman, and Edgar R. Rogier, both of Minnetonka, Minn., assignors to Henkel Corporation, Minneapolis, Minn.

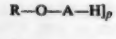
Division of Ser. No. 415,522, Sep. 7, 1982,. This application Oct. 26, 1984, Ser. No. 665,254

Int. Cl.[4] C08G *18/14, 18/48, 18/42*

U.S. Cl. 521—137 **35 Claims**

1. Urethane linked reaction products of

(a) at least one alkoxylated polyester polyol formed by reacting (i) at least one non-gelled polyester polyol of the formula:



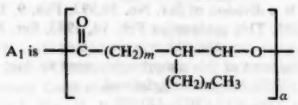
where

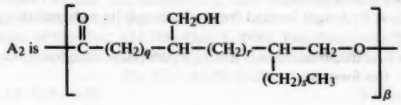
R is a polyol residue;

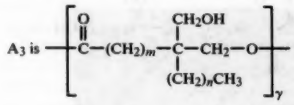
p is an integer from 2 to 6; and,

A may be the same or different and is selected from the group consisting of A_1, A_2, and A_3, and combinations of A_1, A_2 and A_3,

where







where m, n, p, q, r, α, β and γ are integers and

where

m>3

n≧0 and

m+n is from 11 to 19

q>3

r≧0

s≧0 and

q+r+s is from 10 to 18

α is from 0 to 10

β is from 0 to 10 and

γ is from 1 to 10, except that all α's, β's and γ's in any given compound are not all zero; with (ii) at least one alkylene oxide in a ratio of moles of alkylene oxide per equivalents of hydroxyl in the polyester polyol from about 0.5:1 to 5:1; and

(b) from about 80% to about 120% on a hydroxyl-isocyanate equivalent basis of at least one polyisocyanate.

4,543,370

DRY EDIBLE FILM COATING COMPOSITION, METHOD AND COATING FORM

Stuart C. Porter, Hatfield, and Edward J. Woznicki, Douglassville, both of Pa., assignors to Colorcon, Inc., West Point, Pa.

Continuation-in-part of Ser. No. 98,531, Nov. 29, 1979, abandoned. This application Nov. 6, 1980, Ser. No. 202,831

Int. Cl.[4] C08J *3/12*

U.S. Cl. 523—100 **63 Claims**

1. A dry powder edible film coating composition for use in pharmaceuticals, confectionery and food, comprising a dry mixture obtained by dry blending ingredients, including

powerded particles of a film forming non-toxic edible polymer,

Powered edible pigment particles,

an edible polymer plasticizer, and

a surfactant,

said dry mixutre being capable of dispersion in a liquid without agglomeration to form a liquid coating dispersion.

4,543,371

POLYMERIC COMPOSITIONS AND HYDROGELS FORMED THEREFROM

Paul M. Gallop, Chestnut Hill, and Donald R. Korb, Boston, both of Mass., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 240,739, Mar. 5, 1981, Pat. No. 4,379,864, which is a division of Ser. No. 10,992, Feb. 9, 1979, Pat. No. 4,267,295. This application Feb. 14, 1983, Ser. No. 466,274

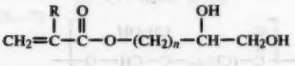
The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.

Int. Cl.[4] C08F *220/20*

U.S. Cl. 523—106 16 Claims

1. A hydrogel formed from a hydrophilic polymer comprising:

a first monomer comprising a hydrophilic compound having the formula:



wherein:

R is hydrogen or methyl; and

n is an integer from 1 to 4;

a second monomer comprising a substantially insoluble acrylate or methacrylate selected from the group consisting of methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl methacrylate, propyl acrylate, propyl methacrylate, isopropyl acrylate, isopropyl methacrylate, butyl acrylate and butyl methacrylate; and

a third monomer selected from the group consisting of vinyl acetate, 3-buten-1-ol, 2-propen-1-ol, 5-hexenol, methyl vinyl ether, propyl vinyl ether, butyl 3-buten-1-ol ether, N-methyl vinyl amide, N-propyl vinyl amide, N-ethyl-3-butenzmide, vinyl pyrrolidone, 3-hyd..oxypropyl acrylate, 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, methacrylamide, N-methyl methacrylamide, N-N-dimethyl methacrylamide, and mixtures thereof.

16. A contact lens formed from the hydrogel of any one of claims 1 through 11.

4,543,372

LOW DUSTING POWDERY ALGINATE IMPRESSION MATERIAL FOR DENTAL USE

Kazuhiro Watanabe, Kamifukuoka; Sakae Yoshikawa, Chofu, and Shunichi Futami, Nagareyama, all of Japan, assignors to G-C Dental Industrial Corp., Tokyo, Japan

Filed Oct. 26, 1984, Ser. No. 664,963

Claims priority, application Japan, Nov. 2, 1983, 58-204727

Int. Cl.[4] A61K *6/08*

U.S. Cl. 523—109 16 Claims

1. In a powdery alginate impression material for dental use, comprising:

(a) an alginate,

(b) a gelling agent,

(c) a gelation controlling agent,

(d) a filler,

(e) at least one compound selected from the group consisting of oxides, hydroxides and fluorides of metals, the improvement comprising:

(f) at least one hydrophobic liquid having a vapor pressure of not higher than 3.15 mmHg at 20° C. selected from the group consisting of a hydrocarbon and a silicon oil not containing a hydrophilic group, and

(g) polyvinylpyrrolidone.

4,543,373

FAST CURING FURAN FOUNDRY BINDER SYSTEM CONTAINING A METAL SALT ACCELERATOR

Robert Krawiec, Des Plaines, and James E. Menting, Algonquin, both of Ill., assignors to QO Chemicals, Inc., Chicago, Ill.

Filed Nov. 8, 1984, Ser. No. 669,647

Int. Cl.[4] C08K *3/36*

U.S. Cl. 523—144 13 Claims

1. A foundry composition for forming sand cores or sand molds which at ambient temperature can be stripped from a mold cavity within a period of not more than about 40 seconds after placing the composition in said mold cavity which comprises sand, a sulfonic acid catalyst, a furan-based binder and an accelerator selected from the group of zinc chloride and copper chloride.

4,543,374

FURAN FOUNDRY BINDER SYSTEM CONTAINING A CURING PROMOTER

James E. Menting, Algonquin, Ill., assignor to QO Chemicals, Inc., Chicago, Ill.

Filed Nov. 8, 1984, Ser. No. 669,648

Int. Cl.[4] C08K *3/36*

U.S. Cl. 523—144 5 Claims

1. A binder composition adapted to be cured at a temperature of at least about 250° F. comprising a furan based binder, a metal sulfonate curing catalyst therefor and a cure promoter selected from copper chloride, zinc chloride and iron chloride.

2. A treated core sand material capable of being formed into a predetermined shape and bound by an acid curable resin at a temperature of at least about 250° F. so as to retain a shape for use in metal founding, said treated core sand material containing core sand, a furan based binder, a metal sulfonate curing catalyst for said binder and a cure promoter selected from copper chloride, zinc chloride and iron chloride.

4,543,375

PROCESS FOR PRODUCING STORABLE CONCENTRATES AND THEIR USE FOR PRODUCING SURFACE COATINGS

Klaus P. Doebler, Radevormwald; Knut Gräf, Hattingen; Kurt E. Jäger, Wuppertal; Friedrich Johannsen, Heiligenhaus; Jürgen Ritz, Mainz-Mombach, and Dietrich Saatweber, Wuppertal, all of Fed. Rep. of Germany, assignors to Herberts Gesellschaft mit beschraenkter Haftung, Wuppertal, Fed. Rep. of Germany

Filed Sep. 13, 1984, Ser. No. 650,070

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 3333073

Int. Cl.[4] C09D *5/02, 5/40;* C08J *3/06;* C25D *13/04*

U.S. Cl. 523—348 24 Claims

1. A process for producing a storable concentrate of finely divided synthetic resin useful in surface coating compositions, comprising:

wet grinding in a first grinding stage, a mixture of undissolved synthetic resin and water, the undissolved resin having a particle size of less than 200 μm after said first stage;

adding to the ground mixture a quantity of soluble synthetic resin in an amount such that the total amount of soluble resin in the mixture is sufficient to maintain a viscosity low enough to ensure adequate further grinding; and

further grinding the mixture in a second grinding stage to produce a storable concentrate wherein at least 95% of the undissolved particles have a particle size of less than about 15 μm.

4,543,376

HEAT-CURABLE SURFACE-COATING AGENTS, AND THEIR USE

Eberhard Schupp, Schwetzingen; Werner Loch, Erpolzheim; Rolf Osterloh, Gruenstadt, and Klaas Ahlers, Muenster, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

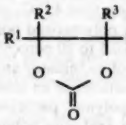
Filed Oct. 31, 1983, Ser. No. 547,092

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311518

Int. Cl.[4] C08L *63/02*

U.S. Cl. 523—414 8 Claims

1. A heat-curable surface-coating agent which contains, as a binder, a mixture of (A) from 1 to 90% by weight of a polyadduct, polycondensate or other polymer which has an average molecular weight $\overline{M}_n$ of from 500 to 10,000 and, per molecule, on average two or more OH or primary or secondary amino groups, or two or more OH, primary and secondary amino groups, or two or more OH and primary or secondary amino groups, or two or more primary and secondary amino groups, and (B) from 99% to 10% by weight of a reaction product of (a) one or more aliphatic, cycloaliphatic or araliphatic polyamines which on average contain two or more prior without hydroxyl mary amino groups per molecule, with groups, and (b) from 75to 200 mole %, based on the primary amino groups of component (a), of one or more cyclic carbonic acid esters of the formula (I)



(I)

where R^1, R^2, R^3 and R^4 are identical or different and each is hydrogen, methyl or ethyl.

4,543,377

POLYMER-FIBRE MIXTURE PROCESS

James A. Crossman, Sarnia, Canada, assignor to Polysar Limited, Ontario, Canada

Filed Jun. 4, 1984, Ser. No. 617,027

Int. Cl.[4] C08K *7/02;* B32B *5/02*

U.S. Cl. 524—13 14 Claims

1. A process for the incorporation of a fibrous material into an organic polymer which process comprises providing a solution of the polymer in an organic solvent in which the fibrous material is insoluble and which is essentially immiscible with water, providing a dispersion of the fibrous material in water, adding the aqueous dispersion of the fibrous material to the agitated solution of the polymer, agitating the mixture whereby the fibrous material transfers from the aqueous phase to the organic solvent phase, coagulating the mixture of polymer and fibrous material from the organic solvent containing them by contact with steam and/or hot water, and recovering and drying the polymer-fibrous material mixture.

4,543,378

POLYAMIDE COMPOSITION

Akito Suhara; Kazuhiko Takasugi; Toshihide Sato, all of Ube; Masashi Ono, Hatano; Kazuo Higuchi, Chigasaki, and Tatsuya Chiba, Ebina, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi and Nissan Motor Company, Ltd., Kanagawa, both of, Japan

Filed Jul. 20, 1983, Ser. No. 515,577

Claims priority, application Japan, Jul. 21, 1982, 57-126870

Int. Cl.[4] C08K *5/34*

U.S. Cl. 524—100 9 Claims

1. A polyamide composition comprising a polyamide with a ratio of the terminal amino group concentration to the terminal carboxyl group concentration of at least 1.5, an inorganic filler, and a triazine, wherein the amount of the inorganic filler is in the range of from 1 to 150 parts by weight per 100 parts by weight of the polyamide and the amount of the triazine is more than 1 part by weight but not more than 5 parts by weight per 100 parts by weight of the sum of the polyamide, and the inorganic filler.

4,543,379

SOFT AND FIRM DENTURE LINER FOR A COMPOSITE DENTURE AND METHOD FOR FABRICATING

Lawrence Gettleman, Metairie, La.; Charles L. Farris, Satellite Beach, Fla.; H. Ralph Rawls, and Ralph J. LeBouef, Jr., both of New Orleans, La., assignors to Gulf South Research Institute, Baton Rouge, La.

Division of Ser. No. 432,248, Oct. 1, 1982, Pat. No. 4,432,730.

This application Dec. 8, 1983, Ser. No. 559,277

Int. Cl.[4] A61K *6/08*

U.S. Cl. 523—120 9 Claims

1. A denture liner curable in situ with a denture base material comprising a phosphonitrilic fluoroelastomer, a C_1–C_6 alkyl methacrylate monomer, and a cross-linking agent comprising a glycol ester of dimethacrylic acid.

4,543,380

PIGMENT FORMULATION, A PROCESS FOR ITS PREPARATION, AND ITS USE

Manfred Schneider, Eppstein; Reinhold Deubel, Bad Soden am Taunus, and Manfred Zimmermann, Offenbach am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 14, 1984, Ser. No. 620,447

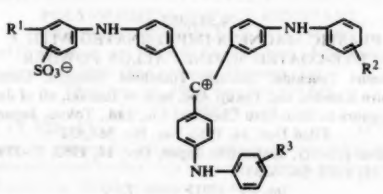
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1983, 3321998

Int. Cl.[4] C08K *5/42*

U.S. Cl. 524—159 7 Claims

1. A pigment formulation containing

(a) an arylpararosanilinesulfonic acid pigment of the formula



in which R^1, R^2 and R^3 each are hydrogen, chlorine, bromine or an alkyl or an alkoxy group of 1-3 carbon atoms in either case, coated by

(b) a water-soluble polyester resin which has been prepared by mixing or partially condensing a water-insoluble film-forming polyhydroxyl compound having an acid number of less than 10 mg of KOH/g and a hydroxyl number of 50

to 650 mg of KOH/g and a filmforming polycarboxyl compound having an acid number of 30 to 280 mg of KOH/g in a molar ratio of carboxyl groups to hydroxyl groups of 1:2 to 1:25, and partially or completely neutralizing the carboxyl groups with nitrogen bases.

4,543,381

TREE RETARDANT ADDITIVE COMPOSITION FOR POLYMERIC INSULATION

Anthony Barlow, and Melvin F. Marginger, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 394,052, Jun. 30, 1982, Pat. No. 4,400,429, which is a continuation of Ser. No. 219,021, Dec. 22, 1980, abandoned. This application Jun. 24, 1983, Ser. No. 507,615

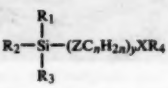
The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.

Int. Cl.⁴ C08K *5/54*

U.S. Cl. 524—188 **21 Claims**

1. A polymeric composition having enhanced resistance to water treeing and electrical treeing consisting essentially of a homogeneous mixture of a polymeric component and a water treeing and an electrical treeing inhibitor consisting essentially of:

(1) a silane having the formula:



wherein

R_1, R_2 and R_3 are the same or different and are $(ZC_nH_{2n})_yXR_4$, C_1 to C_8 alkyl, C_1 to C_8 alkoxy, C_1 to C_8 acyloxy, C_2 to C_8 alkenyl, C_6 to C_{18} aryl or substituted aryl or C_6 to C_{18} aryloxy or substituted aryloxy,

R_4 is C_1 to C_8 alkyl, C_6 to C_{18} aryl or substituted aryl or hydrogen,

Z is methylene, O, NH or S; X is O, NH, or S, n is 1 to 8 and y is 1 to 5 when Z is O and X is O, NH or S, and n is 2 and y is 1 when Z is methylene and X is O, NH or S, and (2) an unsubstituted or an aryl-substituted C_{10} to C_{20} fatty acid, said aryl substituent being a C_6 to C_{18} aryl or substituted aryl, said silane and said fatty acid each being provided in an amount which when combined with the other provides a combined amount which is effective to inhibit water treeing and electrical treeing in said polymeric composition and which does not adversely affect the electrical insulating properties of said polymeric composition, wherein the ratio of silane to fatty acid is in the range of about 3:1 to about 1:1, respectively.

4,543,382

PLASTIC MAGNETS IMPREGNATED WITH A DYE-COATED MAGNET ALLOY POWDER

Michinori Tsuchida, Ibaraki; Toshihide Shimizu, Urayasu; Ichiro Kaneko, and Tokuji Abe, both of Ibaraki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1983, Ser. No. 561,552

Claims priority, application Japan, Dec. 14, 1982, 57-219600; Mar. 31, 1983, 58-56333

Int. Cl.⁴ H01F *1/06, 7/02*

U.S. Cl. 524—267 **4 Claims**

1. A plastic magnet which comprises a synthetic thermoplastic resin as the matrix and a magnetic alloy powder, the surface of the powder being coated with an organic dye in a coating amount in the range from 0.02 to 2% by weight, said powder being uniformly blended with the synthetic thermoplastic resin in a ratio of resin to powder in the range from 92:8 to 5:95 by weight.

4,543,383

IMPACT RESISTANT RESINS AND METHOD FOR MAKING THE SAME

Ernst Heil, Stockstadt; Franz Wenzel, Darmstadt; Peter J. Arndt, Seeheim-Jugenheim, and Walter Schellhaas, Zwingenberg, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 407,913, Aug. 13, 1982, abandoned, which is a continuation-in-part of Ser. No. 209,516, Nov. 24, 1980, abandoned. This application Dec. 21, 1984, Ser. No. 684,179

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951045

Int. Cl.⁴ C08F *265/06*

U.S. Cl. 524—458 **7 Claims**

1. A continuous emulsion polymerization method using a system of reactors for making an aqueous dispersion of an impact resistant resin having a Vicat softening temperature greater than 90° C. and thus adaptable to use as a component of impact resistant polymethacrylate forming masses, which method consists essentially of

(1) in a first reactor, emulsion polymerizing a first monomer component comprising from 70 to 90 percent by weight of a C_1–C_4 alkyl acrylate, from 5 to 30 percent of styrene or lower alkyl-substituted styrene, 0 to 10 percent of a C_1–C_4 alkyl methacrylate, and 0 to 10 percent of at least one further different, copolymerizable, monomer, which first component when polymerized forms a rubbery polymer phase having a $T_{\lambda max}$ less than 45° C., onto core polymer particles of completely polymerized polymethyl methacrylate crosslinked with 0.5 to 10 percent of a crosslinking agent, in the presence of an initiator and an emulsifier to form an emulsion of particles of an intermediate product comprising said core polymer particles covered with a rubbery polymer phase, said core polymer particles having an average particle size of less than 5 nanometers, said polmerization being effected only until a degree of polymerization of said first monomer component to form said rubbery polymer phase of 80 to 95 percent is attained;

(2) transferring said emulsion of said intermediate product to a second reactor and emulsion polymerizing methyl methacrylate onto the particles of said intermediate product in the presence of unpolymerized portions of said first monomer component and of further added initiator but without addition of further emulsifier, whereby an emulsion of a further product comprising particles of said intermediate product covered with a shell of harder polymethyl methacrylate polymer is obtained; and then

(3) transferring said emulsion of said further product to a third reactor and continuing polymerization to a degree of more than 99.5 percent.

4,543,384

COOLING TOWER FILL COMPOSITIONS

Jack F. Blevins, Leola, and Jay L. Piersol, Lancaster, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

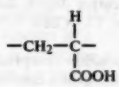
Continuation-in-part of Ser. No. 202,619, Oct. 31, 1980, abandoned. This application Feb. 17, 1983, Ser. No. 467,196

Int. Cl.⁴ C08L *15/02;* **D21H** *5/18*

U.S. Cl. 524—501 **12 Claims**

12. A method of producing a felt sheet composition, which method comprises

(a) forming an aqueous slurry containing asbestos fibers and an acrylic acid polymer, said polymer consisting essentially of repeating units of the formula



said polymer having a molecular weight of from about 200,000 to about 3,000,000;

(b) adding a synthetic rubber latex to the slurry to thereby precipitate the latex on the fibers and form a furnish composition; and

(c) removing water from the composition to thereby form the felt sheet composition.

4,543,385

BLEND COMPOSITIONS OF SULFO EPDM'S HAVING IMPROVED COMPRESSION SET PROPERTIES

Pawan K. Agarwal, Westfield; Ilan Duvdevani, Leonia, and Robert D. Lundberg, Bridgewater, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 28, 1983, Ser. No. 566,348

Int. Cl.[4] C08L *23/32, 23/26*

U.S. Cl. 524—518 **15 Claims**

1. An elastomeric blend composition having improved compression set properties of less than about 16 percent at 25° C. and having a viscosity at 0.73 sec^{-1} and at 200° C. of about 8×10^3 to about 8×10^5 poises, said composition formable into an elastomeric article, consisting essentially of:

(a) a neutralized sulfonated EPDM terpolymer having a viscosity at 0.73 sec^{-1} and at 200° C. of about 5×10^4 poises to about 5×10^6 poises and about 10 to about 50 meq. sulfonate groups per 100 grams of said sulfonated EPDM terpolymer, said sulfonate groups being neutralized; and

(b) about 2 to about 46 parts by weight of an an EPDM terpolymer, said EPDM terpolymer being the same EPDM terpolymer as said EPDM terpolymer used to form said sulfonated EPDM terpolymer.

4,543,386

VINYLIDENE CHLORIDE COPOLYMER AQUEOUS LATEX COMPOSITION

John C. Padget, Frodsham, and Donald H. McIlrath, Liverpool, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Feb. 7, 1984, Ser. No. 577,881

Claims priority, application United Kingdom, Feb. 21, 1983, 8304747; Jul. 28, 1983, 8320388

Int. Cl.[4] C08L *33/00*

U.S. Cl. 524—523 **34 Claims**

1. An aqueous latex composition comprising at least one copolymer A and at least one copolymer B, characterized in that

A is an amorphous copolymer comprising polymerised units of vinylidene chloride and at least one internally plasticising comonomer; and which copolymer has a Tg in the range from −50 to <0° C; and

B is an amorphous copolymer comprising polymerised units of vinylidene chloride and at least one comonomer selected from alkyl acrylates and methacrylates having 1 to 12 carbon atoms in the alkyl group, alkoxyalkyl acrylates and methacrylates having 1 to 12 carbon atoms in the alkyl groups, styrene, acrylonitrile, vinyl acetate, and vinyl ethyl ether; and which copolymer has a Tg in the range 0° to 30° C.; and wherein the dry weight ratio of the at least one copolymer A: the at least one copolymer B is from 95:5 to 10:90, and wherein said composition provides contactable layers after drying.

4,543,387

AQUEOUS LATEX COPOLYMER COMPOSITIONS

John C. Padget, Cheshire, and Donald H. McIlrath, Liverpool, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Feb. 7, 1984, Ser. No. 577,882

Claims priority, application United Kingdom, Feb. 21, 1983, 8304748; Jul. 28, 1983, 8320386

Int. Cl.[4] C08L *33/00*

U.S. Cl. 524—523 **31 Claims**

1. An aqueous latex composition comprising at least one copolymer A and at least one copolymer B characterised in that:

A is an amorphous copolymer comprising polymerised units (a) of at least one monomer selected from alkyl acrylates and methacrylates having 1 to 12 carbon atoms in the alkyl group, alkoxyalkyl acrylates and methacrylates having 1 to 12 carbon atoms in the alkyl group, vinylidene chloride, acrylonitrile, styrene, vinyl acetate, and vinyl ethyl ether, said copolymer A including units of at least one internally plasticising comonomer, and which copolymer has a Tg in the range −50 to <0° C.; and

B is a crystalline copolymer comprising polymerised units of vinylidene chloride; and which copolymer has a Tg which is not more than 30° C.; and wherein the dry weight ratio of the at least one copolymer A: the at least one copolymer B is from 95:5 to 10:90, and wherein said composition provides contactable layers after drying.

4,543,388

THERMOSETTABLE POLYMERS OR PREPOLYMERS PREPARED FROM POLYMETHYLATED PYRAZINES AND AROMATIC POLYALDEHYDES AND CURED PRODUCTS THEREFROM

Duane S. Treybig, Lake Jackson, and Loren L. Swearingen, Clute, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 611,244, May 17, 1984, abandoned. This application Nov. 9, 1984, Ser. No. 670,428

Int. Cl.[4] C08G *16/02*

U.S. Cl. 524—597 **183 Claims**

1. A thermosettable product which results from reacting (A) at least one pyrazine compound containing at least two substituent groups which have at least one hydrogen atom attached to a carbon atom which is attached to the ring or mixture of such pyrazines and (B) at least one of (1) at least one material having at least two aldehyde groups or (2) a mixture of (a) at least one aldehyde having at least two aldehyde groups and (b) at least one aldehyde having only one aldehyde group; wherein components (A) and (B) are employed in a mole ratio of (A):(B) of from about 0.25:1 to about 4:1.

4,543,389

COPOLYMERIZATION CATALYST AND PROCESS FOR POLYMERIZING IMPACT RESISTANT ETHYLENE-PROPYLENE POLYMERS

Israel G. Burstain, and Brian L. Goodall, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 10, 1984, Ser. No. 598,619

Int. Cl.[4] C08F *297/08*

U.S. Cl. 525—53 **13 Claims**

1. In the process for preparing impact resistant ethylene-propylene polymers having high impact properties combined with high stiffness, which process comprises:

(a) preparing a propylene prepolymer by polymerizing propylene in a first liquid phase reaction zone in the presence of a first catalyst system comprising:

(i) a highly active solid catalyst component comprising titanium tetrachloride, magnesium chloride, and an electron donor,

(ii) as cocatalyst a compound AlR_3 where R represents an alkyl group of from 2 to 8 carbon atoms, and

(iii) a selectivity control agent which may be partly or totally complexed with the co-catalyst;

(b) separating the propylene prepolymer from volatile constituents; and

(c) introducing said separated propylene prepolymer, ethylene monomer and propylene monomer into at least one vapor phase reaction zone;

the improvement wherein a second catalyst system is introduced into said vapor phase reaction zone, said second catalyst system comprising the solution prepared by:

(i) polymerizing a C_5–C_9 alpha-monoolefin in a second liquid phase reaction zone in the presence of a second catalyst system selected from the group consisting of:

(i) a $MgCl_2$ supported-type catalyst system comprising a highly active solid catalyst component comprising titanium tetrachloride, magnesium chloride, and an electron donor, and as cocatalyst a compound $AlR^1{}_3$ where R^1 represents an alkyl group of from 2 to 8 carbon atoms; and

(ii) a Ziegler/Natta-type catalyst system comprising an active $TiCl_3$ catalyst component and an organoaluminum compound of the formula $AlR^2{}_nX_{3-n}$ where R^2 is an alkyl group of 2 to 12 carbon atoms, X is hydrogen or halogen and n has a value of from 0.1 to 3;

and a diluent, wherein said diluent is selected such that the resulting polymer is soluble therein and wherein the amount of C_5–C_9 alpha-monoolefin polymerized therein is about 0.05 to about 100 grams per gram of second catalyst system; and

(ii) recovering the resultant catalyst-diluent-polymer mass.

4,543,390

ANTISTATIC RESINOUS COMPOSITIONS

Masayuki Tanaka, Nagoya; Katsuharu Morioka, Kani, and Akihiko Kishimoto, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 20, 1984, Ser. No. 683,874

Int. Cl.[4] C08L *51/08*

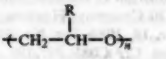
U.S. Cl. 525—63 **15 Claims**

1. An antistatic resinous composition comprising

(A) from 1 to 70 parts by weight of graft copolymers prepared by emulsion polymerization of

(a) from 5 to 90 parts by weight of monomer mixture consisting of

(i) from 50 to 100 percents by weight of at least one monomer having polyalkylene oxide chains represented by the following general formula (I);



(I)

wherein R denotes a radical selected from the group consisting hydrogen atom and methyl and n denotes and integer of 2 to 100, and

(ii) from 50 to 0 percents by weight of at least one vinyl monomer selected from the group consisting of aromatic vinyl monomers, acrylate ester monomers, methacrylate ester monomers and vinyl cyanide monomers

in the presence of (b) from 95 to 10 parts by weight of rubbers and

(B) from 99 to 30 parts by weight of thermoplastic resins compatible with said graft copolymers.

4,543,391

POLYPHENYLENE ETHER COMPOSITIONS

Isao Kuribayashi, Yokosuka, and Kunio Fukuda, Chigasaki, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

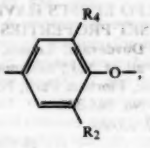
Continuation-in-part of Ser. No. 301,228, Sep. 11, 1981, abandoned. This application Nov. 19, 1981, Ser. No. 323,101

Claims priority, application Japan, Sep. 16, 1980, 55-127117

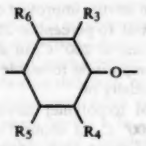
Int. Cl.[4] C08L *61/04*

U.S. Cl. 525—68 **81 Claims**

1. A resin composition which consists essentially of 20 to 80 wt. % of polyphenylene ether, consisting of a consituent unit (I) or constituent units (I) and (II) which are recurring units expressed by the general formulae:



(I)



(II)

(wherein R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different univalent residues selected from the group consisting of alkyl radical containing one to four carbons, excluding tertiary butyl radical, aryl radical, halogen and hydrogen, provided R_5 and R_6 should not be hydrogen at the same time), and 80 to 20 wt. % of rubber reinforced high impact polystyrene, wherein the polyphenylene ether employed has the intrinsic viscosity (η) (30° C., chloroform solution) in the range of 0.50 to 0.80 and the eluting amount equivalent to polystyrene molecular weight of 3000 or less by gel permeation chromatography of not more than 5 wt. %.

4,543,392

POLYMERIC MATERIALS AND NOVEL THERMOPLASTIC RESIN COMPOSITIONS

Hideo Kasahara, Yokohama; Hiroshi Suzuki, Tokyo, and Noriaki Umeda, Yokosuka, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Continuation of Ser. No. 302,670, Sep. 15, 1981, abandoned. This application May 26, 1983, Ser. No. 499,021

Claims priority, application Japan, Sep. 25, 1980, 55-132295; Feb. 27, 1981, 56-26880

Int. Cl.[4] C08G *81/02, 41/04*

U.S. Cl. 525—90 **59 Claims**

1. A polymeric material which comprises a novel copolymer comprising 1 to 99% by weight of a polymer chain moiety derived from a copolymer prepared from ethylenically unsaturated monomers having a molecular weight of 10,000 to 300,000 containing 1 to 30 mol % by weight of an imide compound of an α,β-unsaturated dicarboxylic acid based on the weight of the copolymer and 99 to 1% by weight of a polymer chain moiety derived from a polyamide having repeating carbonamide groups on the integral part of the polymeric chain and having a molecular weight of 10,000 to 50,000, both of said chain moieties being bonded to each other, the novel copolymer having multiple phase and being prepared by grafting a polymer onto another polymer.

4,543,393
MIXTURES, FOR POLYURETHANE ADHESIVES, WHICH CONSIST OF POLYOLS AND/OR POLYAMINES AND POLYISOCYANATES, ARE LIQUID AT ROOM TEMPERATURE, HAVE A LONG SHELF LIFE AND CAN BE ACTIVATED BY HEAT

Rainer Blum, Ludwigshafen; Hellmut Buensch, Leimen; Wolfgang Druschke, Dirmstein, and Helmut Mueller, Kaiserslautern, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 16, 1984, Ser. No. 631,506

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3325735

Int. Cl.[4] C08G *18/80*

U.S. Cl. 525—124 **7 Claims**

1. A mixture which is liquid at room temperature, has a long shelf life and can be activated by heat and which comprises

(A) polyols and/or polyamines, component (A) having a viscosity of less than 100 Pa.s at room temperature, the OH number being less than 112 and the mean functionality of the starting materials being from 1.1 to 6, and

(B) polyisocyanates which are dispersed in (A), are stabilized to (A) as a result of a phase-separating deactivation at the surface of the dispersed particles, and are present in an amount such that there are from 0.1 to 2 equivalents of the total isocyanate present in the polyisocyanate per equivalent of hydroxyl or amino groups of component (A).

4,543,394
FLUOROELASTOMER HAVING IMPROVED COMPRESSION SET RESISTANCE

Joseph B. Finlay, Wilmington, and Leo Ojakaar, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 15, 1983, Ser. No. 523,189

Int. Cl.[4] C08F *214/22*

U.S. Cl. 525—276 **6 Claims**

1. In a peroxide-curable fluoroelastomer composition wherein the composition comprises a tetrapolymer whose interpolymerized units consist essentially of (1) about 30–40 weight percent vinylidene fluoride, (2) about 30–40 weight percent of the fluorine-containing monomers hexafluoropropylene or pentafluoropropylene (3) about 25–35 weight percent tetrafluoroethylene, and (4) up to 3 mole percent, based upon the tetrapolymer, of a bromine-containing olefin, with the proviso that enough of such units are present to provide at least 0.05 weight percent bromine in the tetrapolymer, wherein said bromine-containing olefin is a compound having the formula $CX_2{=}CX(CY_2)_n(CZ_2)_2Br$ where X is hydrogen or fluorine, Y is hydrogen, fluorine or chlorine, Z is fluorine or chlorine and n is 0–5, and said fluoroelastomer composition contains from about 1–6 parts per hundred parts tetrapolymer of trimethallylisocyanurate.

5. A fluoroelastomer composition of claim 1 additionally containing 0.25–3 parts per hundred parts tetrapolymer of a coagent wherein said coagent is N,N'-m-phenylene dimaleimide.

6. A fluoroelastomer composition of claim 1 additionally containing 0.25–3 parts per hundred parts tetrapolymer of a coagent wherein said coagent is triallylcyanurate.

4,543,395
TERMINALLY FUNCTIONAL POLYMERS

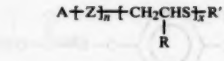
Paul A. Mancinelli, Aston, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 15, 1984, Ser. No. 621,314

Int. Cl.[4] C08F *8/34*

U.S. Cl. 525—332.4 **4 Claims**

1. A macromolecular monomer having the general formula



where A is the alkyl portion of an alkyllithium initiator, Z is a repeating monomeric unit of a monomer susceptible to anionic polymerization, n is a positive interger from 3 to 1500, R is either hydrogen, C_1–C_{10} alkyl, or phenyl, x is a positive integer of at least 1, and R' is a radical formed by removal of the halogen from a halogenated compound containing a moiety polymerizable by free-radical, cationic, or anionic initiators.

4,543,396
METHOD OF MAKING HEAT-RESISTANT POLYESTER WITH PHENYLENE-BIS-OXAZOLINE

Yoshihiro Arai, Joyo, and Takumi Tanaka, Uji, both of Japan, assignors to Unitika Limited, Osaka, Japan

Filed Aug. 24, 1984, Ser. No. 643,909

Claims priority, application Japan, Oct. 3, 1983, 58-185655

Int. Cl.[4] C08F *283/00*; C08G *63/76*

U.S. Cl. 525—440 **2 Claims**

1. In a method of making a heat-resistant polyester, said polyester consisting of an aromatic dicarboxylic acid and a glycol component having 2–6 carbon atoms by reducing the amount of carboxyl end groups in the polyester to below 15 g equivalents per 10^6 g of polymer, the improvement comprising reacting said polyester in a molten state with from about 0.1 to about 5 weight percent of molten 2,2'-1,3-phenylene-bis(2-oxazoline), said molten polyester having and intrinsic viscosity of at least 0.50, and

immediately forming said molten polyester into a shaped article, thereby eliminating decomposition due to remelting.

4,543,397
STYRYLOXY RESINS AND COMPOSITIONS THEREOF

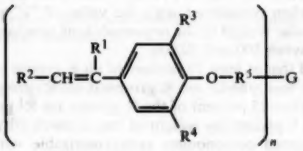
John Woods, Stillorgan; John M. Rooney, Naas, and Stephen J. Harris, Ballinteer, all of Ireland, assignors to Loctite (Ireland) Ltd., Tallaght, Ireland

Continuation-in-part of Ser. No. 621,419, Jun. 18, 1984, abandoned. This application Dec. 4, 1984, Ser. No. 677,724

Int. Cl.[4] C08L *25/04*

U.S. Cl. 525—455 **15 Claims**

1. Polyfunctional cationically polymerizable styryloxy compounds of the formula

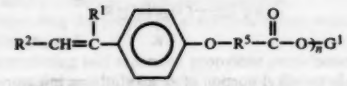


where R^1 and R^2 are H, or one of R^1 and R^2 are H and the other is methyl; R^3 and R^4 are H, lower alkyl, or alkoxy if R^2 is not methyl; R^5 is a divalent hydrocarbon radical; G is any multivalent organic or inorganic radical free of amino, aliphatic hydroxyl, aliphatic thiol, or other groups which interfere with cationic polymerization; and n is an integer of two or more, said compounds selected from the class consisting of:

(a) compounds in which G comprises a polyorganosiloxane backbone;

(b) compounds when G is an n valent hydrocarbon radical; and

(c) compounds of the formula:



where G_1 is as defined for G.

4,543,398

OPHTHALMIC DEVICES FABRICATED FROM URETHANE ACRYLATES OF POLYSILOXANE ALCOHOLS

Stephen W. Bany, St. Paul; Robert J. Koshar, Mahtomedi, and Todd R. Williams, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 489,318, Apr. 28, 1983, abandoned. This application Sep. 19, 1984, Ser. No. 652,417

Int. Cl.⁴ C08G *77/00*

U.S. Cl. 525—474 **31 Claims**

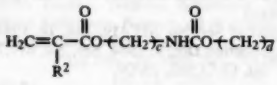
1. An ophthalmic device comprising an addition polymer which is the reaction product of a composition comprising:

(a) 15 to 100 percent by weight of at least one organopolysiloxane urethane acrylate having the formula

I

wherein each R is independently an alkyl group having 1 to 6 carbon atoms, a cycloalkyl group having from 3 to 6 carbon atoms, a phenyl group, a hydroxyalkyl group having 1 to 12 carbon atoms, a (polyalkoxyl)alkyl group having 1 to 3 alkoxy groups in which each alkyl group has 1 to 3 carbon atoms, or R^1;

wherein R^1 is an acryl- or methacryloyloxyalkyl carbamoyloxyalkyl group having the formula,



in which R^2 is hydrogen or a methyl group, c is an integer of 2 to 6, and d is an integer of 1 to 12;

a is zero, one, or two;

b is a number having an average value from 2 to 100 such that when considered with the value of "a" provides a molecular weight to the organosiloxane urethane acrylate of between 500 and 20,000;

provided that at least 75 percent of all R groups are methyl and at least one of the R groups is an R^1 group, and no more than 25 percent of the R groups are R^1 groups; and

(b) 85 to 0 percent by weight of one or more ethylenically-unsaturated comonomers copolymerizable with the organopolysiloxane urethane acrylate.

4,543,399

FLUIDIZED BED REACTION SYSTEMS

John M. Jenkins, III; Russell L. Jones, both of South Charleston, and Thomas M. Jones, Dunbar, all of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 361,547, Mar. 24, 1982, abandoned. This application Apr. 3, 1984, Ser. No. 594,962

Int. Cl.⁴ C08F *2/34*

U.S. Cl. 526—70 **39 Claims**

1. In a continuous gas fluidized bed polymerization process for the production of polymer from monomer by continuously passing a gaseous stream comprising said monomer through a fluidized bed reactor in the presence of catalyst under reactive conditions, withdrawing polymeric product and a stream comprising unreacted monomer gases, cooling said stream comprising unreacted monomer gases and returning said cooled stream to said reactor together with sufficient additional monomer to replace that monomer polymerized and withdrawn as product, the improvement which comprises: cooling part or all of said stream comprising unreacted monomer gases to form a mixture comprising a gas phase and a liquid phase and reintroducing said mixture into said reactor wherein said liquid phase is vaporized.

4,543,400

TITANIUM TRICHLORIDE CATALYST COMPONENT AND THE PROCESS FOR THE PRODUCTION THEREOF

Harry J. Wristers, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 102,677, Dec. 12, 1979, abandoned, which is a division of Ser. No. 945,929, Sep. 29, 1978, Pat. No. 4,295,991. This application May 12, 1982, Ser. No. 377,515

Int. Cl.⁴ C08F *4/64, 10/06*

U.S. Cl. 526—119 **29 Claims**

1. In a process for the polymerization of α-olefins, wherein an α-olefin is contacted with a Ziegler-type catalyst comprising $TiCl_3$ and an organometallic compound under α-olefin polymerization conditions, the improvement comprising employing as said $TiCl_3$, a non-friable, highly active $TiCl_3$ catalyst composition produced by:

(1) contacting $TiCl_4$ in an inert hydrogen diluent with an organoaluminum compound at a temperature in the range of about −50° C. to about 30° C. to produce a $TiCl_3$ reduced solid product slurry,

(2) contacting the reduced solid $TiCl_3$ slurry with a minor amount of an α-olefin having from 3 to 8 carbon atoms under polymerization conditions without addition of added cocatalyst so as to obtain a non-pulverized reduced $TiCl_3$ solid product containing about 1 to about 1,000 wt. % of prepolymerized α-olefin based on the weight of $TiCl_3$, and

(3) treating said prepolymerized reduced solid with one of (a) a chlorinated hydrocarbon having at least two carbon atoms and a Lewis base complexing agent, or (b) $TiCl_4$ and a Lewis base complexing agent to convert the prepolymerized $TiCl_3$ reduced solid to a highly active, crystalline prepolymerized $TiCl_3$ composition.

4,543,401

PEROXYGEN COMPOUND-ISOASCORBIC ACID REDOX CATALYST SYSTEM FOR SUSPENSION POLYMERIZATION OF VINYL CHLORIDE

Norman G. Gaylord, New Providence, N.J., assignor to Plastic Specialties and Technologies, Inc., Barrington, Ill.

Filed May 4, 1981, Ser. No. 260,658

The portion of the term of this patent subsequent to May 3, 2000, has been disclaimed.

Int. Cl.⁴ C08F *4/40*

U.S. Cl. 526—204 **1 Claim**

1. A process for the preparation of polymers and copolymers of vinyl chloride, which consists in suspension polymerization in the presence of a redox catalyst system consisting of t-butyl peroxyoctoate and isoascorbic acid.

4,543,402

ELECTRICALLY CONDUCTIVE PYRROLE POLYMERS

Lee Traynor, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

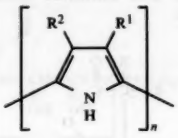
Filed Apr. 18, 1983, Ser. No. 486,161

Int. Cl.⁴ C08D *13/00*; C08F *126/06*

U.S. Cl. 526—258 **7 Claims**

1. A substituted pyrrole polymer linked through N-adjacent

carbon atoms of the pyrrole nucleus, said polymer being represented by the structure:



(III)

wherein,

n is an integer in the range from about 2 to about 100;

R^1 is selected from the group consisting of hydrogen, alkyl having from 1 to about 6 carbon atoms, cycloalkyl having from 3 to about 7 ring carbon atoms one or more of which may be substituted, alkoxyalkyl having from 3 to about 24 carbon atoms, and benzyl which may optionally be ring-substituted with halogen or lower alkyl having from 1 to about 6 carbon atoms;

R^2 is selected from the group consisting of hydroxyphenyl which may be ring-substituted, and an acyclic ether selected from the group consisting of (i) alkoxy represented by $—OR^3$, wherein R^3 represents alkyl having from 1 to about 12 carbon atoms, alkoxyalkyl having from 2 to about 24 carbon atoms, phenyl which may be substituted, benzyl or substituted benzyl, heteroaryl or substituted heteroaryl; (ii) polyalkoxy represented by the structure $CH_3—OCH_2CH_2—_{n'}$ wherein n' is an integer in the range from 1 to about 20; and (iii) $R^4—O—R^5$ wherein either R^4 or R^5 is a linking group selected from the group consisting of phenyl and benzyl, each of which may be substituted, alkyl having from 1 to about 25 carbon atoms, and cycloalkyl having from 3 to about 7 ring carbon atoms one or more of which may be substituted; and,

R^1 may be substituted with R^2, and if so substituted, each R^2 substituent may be the same or different;

said polymer being formed by a process comprising,

(a) forming a solution of said monomer and an electrolyte which generates an acid ion in a mutual solvent, said monomer having the structure

(I)

wherein R^1 and R^2 have the same connotation as that given hereinabove;

(b) passing electrical current between electrodes placed in said solution at an applied voltage and intensity sufficient to deposit a polymer on the anode; and,

(c) recovering a compactable powdery deposit of said polymer.

4,543,403

CURABLE COMPOSITION

Katsuhiko Isayama; Toshifumi Hirose, and Fumio Kawakubo, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

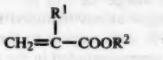
Filed Mar. 9, 1984, Ser. No. 587,962

Claims priority, application Japan, Mar. 15, 1983, 58-43848

Int. Cl.[4] C08F *26/12, 126/08, 226/08*

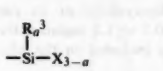
U.S. Cl. 526—263 **12 Claims**

1. A curable composition comprising a polymer having an organic silicon group in the chain end prepared by polymerizing (a) a monomer comprising an acrylic or methacrylic acid ester of the general formula (I):



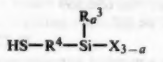
(I)

wherein R^1 is hydrogen atom or methyl group, and R^2 is an alkyl group having 1 to 14 carbon atoms, in the presence of (c) 0.01 to 20 parts of a radical polymerization initiator having a group of the general formula (II):



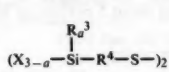
(II)

wherein R^3 is a monovalent hydrocarbon group having 1 to 6 carbon atoms, X is a hydrolyzable group, and "a" is 0, 1 or 2, and at least one member selected from the group consisting of (b) 0.01 to 20 parts of a polymerizable unsaturated organic silicon compound and (d) 0.01 to 20 parts of an organic silicon compound as a chain transfer agent selected from the group consisting of a compound of the general formula (III):



(III)

wherein R^3, X and "a" are defined above, and R^4 is a bivalent organic group, and a compound of the general formula (IV):



(IV)

wherein R^3, R^4, X and "a" are as defined above; said parts of the components (b), (c) and (d) being parts by weight per 100 parts by weight of the component (a).

4,543,404

PRIMER COMPOSITION

Shunji Sugano; Koichi Hagiwara, both of Neagari; Isao Miura, Fukuoka, and Akira Honto, Kanazawa, all of Japan, assignors to Negami Chemical Industrial Co., Ltd. and Toshiba Silicone Co., Ltd., both of Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,694

Int. Cl.[4] C08G *77/04*

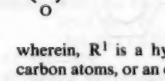
U.S. Cl. 528—26 **8 Claims**

1. A primer composition characterized by comprising:

[A] a reaction product of:

(1) a hydroxyl group-containing organic compound composed of;

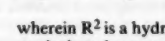
(a) an epoxy group-containing alcohol represented by the general formula [I]:



[I]

wherein, R^1 is a hydrocarbon group having 1 to 15 carbon atoms, or an organic group in which the same or different hydrocarbon groups are bonded to each other by an ether bond or an ester bond; and each of m and n is a value of 1 or more; and

(b) a hydroxyl group-containing (meth)acrylate represented by the formula [II]:



[II]

wherein R^2 is a hydrogen atom or a methyl group; R^3 is a substituted or unsubstituted hydrocarbon group, or a group in which the same or different hydrocarbon groups are bonded to each other by ether bond or the

ester bond, the R^3 being a-valent and having at least one hydroxyl group; and a is an integer of 1 to 3;

an amount of active hydrogen atoms included in the aforesaid (a) being 25 to 75% with respect to the total amount of active hydrogen atoms included in the aforesaid (1), and

(2) a polyisocyanate including 70 to 100% of the theoretical amount of isocyanato groups which will react with the total amount of the active hydrogen atoms included in the aforesaid (1);

[B]an amino group-containing alkoxysilane or its partially hydrolyzed condensate having 0.5 to 1.5 amino active hydrogen atoms per epoxy group included in the aforesaid (1)(a); and

[C] a diluent.

4,543,405

HIGH SOLIDS POLYURETHANE POLYOLS AND COATING COMPOSITIONS THEREOF

Ronald R. Ambrose, Allison Park; Wen-Hsuan Chang; David T. McKeough, both of Gibsonia, and John R. Peffer, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 1, 1984, Ser. No. 656,559

Int. Cl.[4] C08G *18/32*

U.S. Cl. 528—78 **20 Claims**

1. A polyurethane polyol having a number average molecular weight of up to about 1000 which is prepared by reacting a low molecular weight starting polyol with a polyisocyanate, wherein the starting polyol is in an amount sufficient to produce a reaction product containing about 5 percent or higher unreacted starting polyol.

4,543,406

CATHODE-DEPOSITING ELECTRODEPOSITION COATING COMPOSITION

Yutaka Otsuki; Hiroyoshi Omika; Akio Oshima, all of Yokohama; Yoshihiko Araki, Tokyo, and Yasuyuki Tsuchiya, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka and Nippon Oil Company, Ltd., Tokyo, both of, Japan

Filed Oct. 15, 1984, Ser. No. 661,177

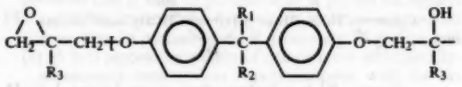
Int. Cl.[4] C08L *63/10, 63/08*

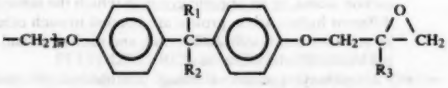
U.S. Cl. 528—111.5 **8 Claims**

1. A cathode-precipitating electrodeposition coating having excellent low-temperature curability, said composition consisting essentially of

(A) 100 parts by weight of a high molecular compound having a molecular weight of 500 to 10,000 and containing carbon-carbon double bonds with an iodine value of 50 to 500 and 30 to 300 millimoles of amino groups per 100 g,

(B) 10 to 200 parts by weight of a product of reaction of a diglycidyl compound represented by the general formula



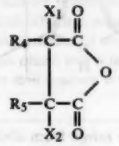


wherein R_1, R_2 and R_3 represent a hydrogen atom or a methyl group and n represents an integer of from 0 to 20, with at least one organic acid component selected from the group consisting of

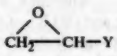
(a) both an alpha, beta-unsaturated dicarboxylic acid and an alpha, beta-unsaturated monocarboxylic acid,

(b) an unsaturated fatty acid containing at least 10% by weight of carbon-carbon conjugated double bonds and having a molecular weight of 100 to 350, and

(c) an alpha, beta-unsaturated monocarboxylic acid, a 1,2-dicarboxylic acid anhydride represented by the general formula



wherein R_4 and R_5 represent a hydrogen atom or an alkyl group having 1 to 20 carbon atoms, provided that either R_4 or R_5 may contain one molecule of a carboxylic acid group, and R_4 and R_5 together may be of a 6-membered ring structure or a heterocyclic structure having a 5-membered ring and a 6-membered ring, said ring structure optionally containing an unsaturated group; and X_1 and X_2 represent a hydrogen atom, an organic group having 1 to 10 carbon atoms, or a bond, provided that when X_1 and X_2 are bonds, the carbon atoms to which X_1 and X_2 are attached will together form a double bond, and a monoepoxy compound represented by the following formula



wherein Y represents a hydrogen atom or an organic group having 1 to 10 carbon atoms, in this sequence, and

(C) 0.005 to 1.0 part by weight as metal of a manganese salt of an organic acid or manganese dioxide.

4,543,407

CATALYTIC PROCESS FOR THE MANUFACTURE OF POLYAMIDES FROM DIAMINES AND DIAMIDES

Benedict S. Curatolo, Maple Heights; Robert C. Sentman, Macedonia, and Gerald P. Coffey, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 3, 1984, Ser. No. 677,262

Int. Cl.[4] C08G *69/00*

U.S. Cl. 528—336 **17 Claims**

1. A process for the manufacture of a solid polyamide comprising contacting an α,ω-diamine, an α,ω-diamide and an oxygenated phosphorus compound catalyst at an elevated temperature and pressure.

4,543,408

STABLE S-ADENOSYLMETHIONINE SALTS, THE PROCESS FOR THEIR PREPARATION, AND THERAPEUTIC COMPOSITIONS WHICH CONTAIN THEM AS ACTIVE PRINCIPLE

Federico Gennari, Truccazzano, Italy, assignor to Bioresearch S.p.A., Milan, Italy

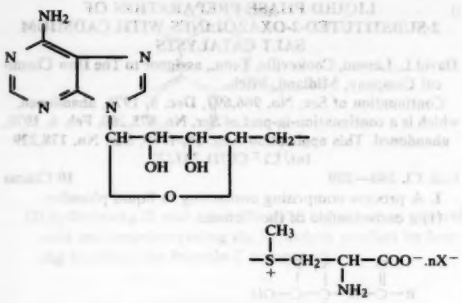
Filed Aug. 16, 1982, Ser. No. 408,682

Claims priority, application Italy, Aug. 24, 1981, 23603 A/81

Int. Cl.[4] C07H *19/06*

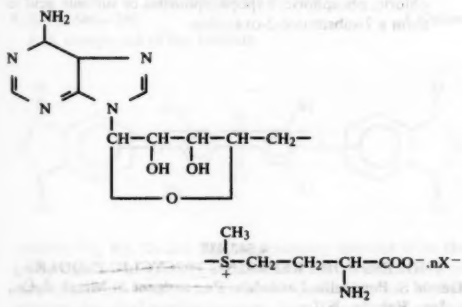
U.S. Cl. 536—26 **13 Claims**

1. S-adenosylmethionine (SAM) salts of formula



in which X is the acid equivalent of a strong mineral acid of pK less than 2.5, and n is 4, 5 or 6.

13. Therapeutic compositions for treating hyperlipemia, cholesterolemia or controlling glucide metabolism comprising an anti-hyperlipemially, anti-cholesterolemially or glucide metabolism controlling effective amount of a therapeutic salt of formula



in which X is the acid equivalent of a strong mineral acid of pK less than 2.5 and n is 4, 5 or 6, in mixture with therapeutically acceptable excipients and diluents.

4,543,409

WATER-INSOLUBLE FIBERS OF CELLULOSE ACETATE, CELLULOSE PROPIONATE AND CELLULOSE BUTYRATE WITH AN EXTREMELY HIGH ABSORPTIVE CAPACITY FOR WATER AND PHYSIOLOGICAL LIQUIDS

Michael Diamantoglou, Erlenbach; Alexander Brandner, Steyrermühl, and Gerhard Meyer, Obernburg, all of Fed. Rep. of Germany, assignors to AKZO NV, Arnhem, Netherlands

Filed Dec. 12, 1983, Ser. No. 560,285

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1982, 3246417

Int. Cl.⁴ C08B *3/08, 3/06;* **D02G** *3/00;* **D01F** *2/00*

U.S. Cl. 536—68 **2 Claims**

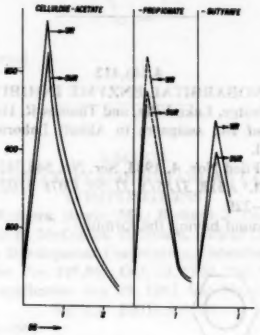
1. Fiber insoluble in water and insoluble in 2-methoxyethanol, comprising cellulose acetate, cellulose propionate or cellulose butyrate, having an extremely high absorption capacity for water and physiological liquids, wherein said fiber exhibits:

a. in the sequence as mentioned above, a degree of esterification of 0.1 to 1.5, 0.1 to 0.95 and 0.15 to 0.8;

b. an average degree of polymerization of 300 to 700;

c. a fiber strength in the conditioned state of 6 to 20 cN/tex;

d. an elongation in the conditioned state of 6 to 20%;



e. a water retentivity of 200 to 750%; and

f. a wicking capacity for water of 8 to 18 cm/g of fiber.

4,543,410

ABSORBENT CELLULOSIC BASE STRUCTURES

Cruz, Jr., Mamerto M., Pennington, N.J., assignor to Morca, Inc., Pennington, N.J.

Filed Jun. 21, 1982, Ser. No. 390,179

Int. Cl.⁴ A61F *13/16;* **B32B** *27/42*

U.S. Cl. 536—84 **18 Claims**

1. Absorbent, coherent, flexible cellulosic structures for application to the body comprising water-insoluble, ring oxidized cellulosic bases of the group of cellulose ethers, cellulose mixed ethers, cellulose ether mixed esters and mixtures thereof, the cellulosic bases having a DS of between about 0.05 and about 0.35, the ring oxidized forms of the cellulosic bases having a carboxyl content attributable to ring oxidation between about 2% and about 52%, said structures being further characterized in that when applied to the body and wet with aqueous body liquid the protruding fibrils and microfibrils on the surfaces and along the edges of the structures and the sharp edges of the structures become highly swollen almost instantaneously whereby the structures are non-irritating to the body over the area to which the structure is applied.

9. The structure according to claim 1 in the form of a porous sponge.

4,543,411

PROCESS FOR SELECTIVE PREPARATION OF SECONDARY AND TERTIARY AMINES

John F. Knifton, and David C. Alexander, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 10, 1983, Ser. No. 550,345

Int. Cl.⁴ C07D *295/04;* **C07C** *85/00*

U.S. Cl. 544—178 **24 Claims**

1. A process for preparing secondary and tertiary amines which comprises reacting an olefin, a nitrogen-containing compound from the group consisting of primary amines and secondary amines, carbon monoxide and hydrogen in the presence of a catalyst system consisting of a ruthenium-containing compound from the group consisting oxides of ruthenium, ruthenium salts of a mineral acid, ruthenium salts of an organic carboxylic acid, ruthenium complexes with carbonyl-containing ligands, ruthenium carbonyls and hydridocarbonyls and substituted species thereof mixed with a tetraalkylphosphonium salt, optionally in the presence of a solvent heating the resultant mixture to a temperature of between 100° C. and

300° C. and a pressure of between 400 and 4000 psi until there is substantial formation of the desired secondary or tertiary amines and separating the resulting product.

4,543,412

PHENOBARBITAL ENZYME INHIBITORS

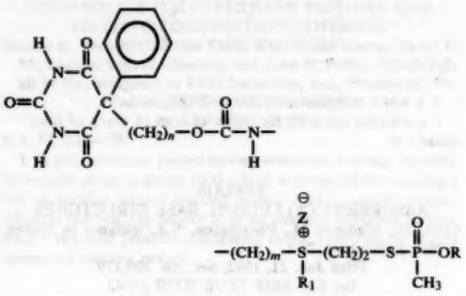
Charles A. Flentge, Lake Villa, and Thomas R. Herrin, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 4, 1983, Ser. No. 548,743

Int. Cl.⁴ A61K *31/675, 31/69;* **C07F** *5/02, 9/65*

U.S. Cl. 544—229 **7 Claims**

1. A compound having the formula:



wherein Z is a biologically compatible counter ion, n and m are each independently an integer from 2 to 6 and R and R_1 are each independently lower alkyl.

4,543,413

SULPHONYL DERIVATIVES OF N-PHENYL PYRIDINEAMINES

David Munro, Maidstone, England, assignor to Shell Oil Company, Houston, Tex.

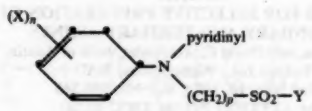
Filed Apr. 20, 1984, Ser. No. 602,582

Claims priority, application United Kingdom, Apr. 22, 1983, 8311003

Int. Cl.⁴ C07D *213/61, 213/75, 213/76*

U.S. Cl. 546—305 **4 Claims**

1. A compound of the formula



wherein the pyridinyl moiety is bonded from a carbon atom thereof to the indicated nitrogen atom, and is optionally substituted by one or two halogen atoms on carbon atoms of the ring; p is zero or one; n is zero, one or two; X is one of halogen, —OH, —COOH, $—NO_2$, —CN, $—NH—C(O)NH_2$, —OR, halogen-substituted R, —C(O)OR, and —NH—C(O)NHR, wherein R is phenyl, alkylphenyl, phenalkyl, alkyl, alkenyl, alkynyl, or cycloalkyl wherein the aliphatic moiety contains up to six carbon atoms; and Y is alkyl of up to six carbon atoms, or phenyl optionally substituted by halogen, amino or alkyl of up to six carbon atoms; or an acid addition salt, N-oxide or metal salt complex thereof.

4,543,414

LIQUID PHASE PREPARATION OF 2-SUBSTITUTED-2-OXAZOLINES WITH CADMIUM SALT CATALYSTS

David L. Larson, Cookeville, Tenn., assignor to The Dow Chemical Company, Midland, Mich.

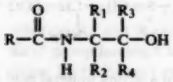
Continuation of Ser. No. 966,697, Dec. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 875,280, Feb. 6, 1978, abandoned. This application Aug. 14, 1980, Ser. No. 178,229

Int. Cl.⁴ C07D *263/20*

U.S. Cl. 548—239 **10 Claims**

1. A process comprising contacting in liquid phase

(1) a carboxamide of the formula



or a carboxylic acid/amine salt precursor of said carboxamide, and wherein R is a hydrocarbon or inertly substituted hydrocarbon group and R_1–R_4 are independently hydrogen or inert organic radicals; with

(2) a small but catalytic amount of cadmium bromide or iodide or a solution cadmium salt of sulfuric, nitric, hydrochloric, phosphoric, hypophosphorous or sulfonic acid to form a 2-substituted-2-oxazoline.

4,543,415

PROCESS FOR PREPARING TRICYCLIC INDOLES

Gerald S. Ponticello, Landsdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

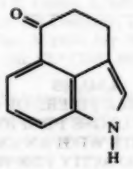
Filed May 19, 1980, Ser. No. 151,085

Int. Cl.⁴ C07D *209/90*

U.S. Cl. 548—436 **4 Claims**

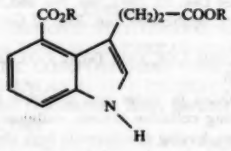
1. A process for preparing a compound of the formula:

I

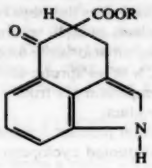


which comprises the steps of

(1) treating a compound of the formula:



wherein R is C_1–C_3 alkyl, with a metalhydride, strong base in dimethylformamide or dimethylsulfoxide solvent to obtain a product of the formula



II

and

(2) hydrolyzing II with a suitable alkali metal base or mineral acid and decarboxylating the hydrolysis product by heating to obtain the formula I' compound.

4,543,416

DI(PHTHALIC ANHYDRIDE) DERIVATIVES OF DI(DISUBSTITUTED PHENOL) SULFONES

Edward N. Peters, Lenox, Mass., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 462,921, Feb. 1, 1983,. This application Apr. 12, 1984, Ser. No. 599,732

Int. Cl.[4] C07D *307/89*

U.S. Cl. 549—241 **4 Claims**

1. A compound of the formula

wherein R_1, R_2, R_3 and R_4 independently selected from the group consisting of lower alkyl of from 1 to about 10 carbon atoms; aryl of from 6 to about 15 carbon atoms; aralkyl, wherein the alkyl portion contains from 1 to about 5 carbon atoms and the aryl portion contains from 6 to about 10 carbon atoms; halogen; lower alkoxy of from 1 to about 10 carbon atoms, and aryloxy of from 6 to about 15 carbon atoms.

4,543,417

ω,ω-DIACYLOXY-2,6-DIMETHYL-OCTATRIENOATES AND -OCTATRIENALS, THEIR PREPARATION AND THEIR USE FOR THE SYNTHESIS OF TERPENE COMPOUNDS

Klaus Schmieder, Frankenthal; Joachim Paust, Neuhofen; Rolf Fischer, Heidelberg, and Hans-Martin Weitz, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

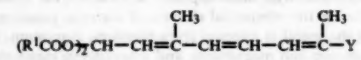
Filed Nov. 28, 1983, Ser. No. 555,394

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 32442726

Int. Cl.[4] C07D *319/06*; C07C *67/02*

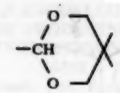
U.S. Cl. 549—375 **6 Claims**

1. A compound of the formula



where Y is —$COOR^1$, formyl or an acetalated formyl group and R^1 is a low molecular weight alkyl radical.

6. A compound as claimed in claim 1, wherein Y is



and R^1 is methyl.

4,543,418

NON-EMISSIVE, FLAME-RETARDANT COATING COMPOSITIONS

Stephen D. Rodgers, Bowie, Md.; Richard J. Dick, Columbus, and Vincent D. McGinnis, Delaware, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Division of Ser. No. 199,843, Oct. 23, 1980, Pat. No. 4,405,761. This application Sep. 29, 1982, Ser. No. 427,645

Int. Cl.[4] E07D *301/08*

U.S. Cl. 549—562 **9 Claims**

1. An anionic, non-emissive, non-flame promoting, room temperature curable, surface-active agent which comprises a polyhalogenated compound containing an anionic group selected from the group consisting of a carboxylate, sulfate, and a phosphate; and a room-temperature curable group selected from the group consisting of an oxirane group, an air-dryable group derived from an air-dryable fatty acid, an air-dryable allyl ether group, and combinations thereof.

4,543,419

PROCESS FOR THE PREPARATION OF DIPHENYLMETHANE DICARBAMATES AND POLYMETHYLENE POLYPHENYL CARBAMATES

Edward T. Shawl, Wallingford, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 25, 1981, Ser. No. 237,827

Int. Cl.[4] C07C *125/073*

U.S. Cl. 560—25 **9 Claims**

1. In a process for the preparation of a mixture of diphenylmethane dicarbamates and polymethylene polyphenyl carbamates by the acid catalyzed condensation of an N-aryl carbamic acid ester with formaldehyde, para-formaldehyde or trioxane or mixtures thereof, at temperatures of from about 30° C. to 170° C., the improvement which comprises removing from the reaction zone with water collection means, during said condensation, water added with reactants and water of condensation by azeotropic distillation with an inert water-azeotroping solvent which forms a binary minimum-boiling azeotrope with water within the condensation temperature range at atmospheric, sub-atmospheric or super-atmospheric pressure, in order to maintain an acid concentration of at least 75 weight percent during the reaction and reduce production of N-(alkoxycarbonyl)phenylaminomethylphenyl impurities.

4,543,420

PYROMELLITATE PLASTICIZERS AND VINYL CHLORIDE

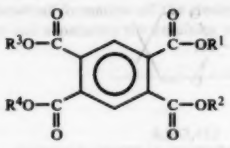
Allen D. Godwin, and Edward J. Wickson, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 15, 1984, Ser. No. 660,735

Int. Cl.[4] C07C *69/76*

U.S. Cl. 560—76 **5 Claims**

1. Compounds of the formula:



wherein R^1, R^2, R^3 and R^4 are the same or different and are selected from the group consisting of iso-nonyl and iso-decyl.

4,543,421

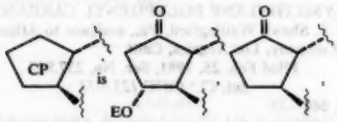
CONJUGATE ADDITION OF ORGANOCUPRATES GENERATED FROM COPPER (I) CYANIDE AND VINYL STANNANES USEFUL IN PROSTAGLANDIN ANALOG SYNTHESIS

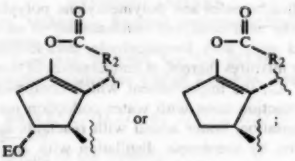
Paul F. Corey, Elkhart, and Harold C. Kluender, South Bend, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 11, 1983, Ser. No. 493,709
Int. Cl.[4] C07C *177/00*
U.S. Cl. 560—106 **10 Claims**

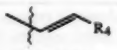
1. A process for the preparation of a prostaglandin analog characterized by the formula:

wherein

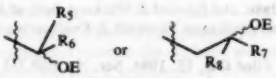




A is ethylene or cis-vinylene; X is CH_2OE or CO_2R_3 where E is H or an acid labile blocking group, R_2 is lower straight or branched chain lower alkyl of 1 to 4 carbon atoms or phenyl and R_3 is alkyl of 1 to 3 carbon atoms and R_1 is butyl or



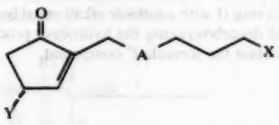
where R_4 is hexyl or



where R_5 is methyl or H, R_6 is alkyl, branched alkyl or cycloalkyl of 5 to 7 carbon atoms, R_7 is methyl, vinyl or H and R_8 is n-alkyl, branched alkyl or alkylated cycloalkyl of 4 to 7 carbon atoms which process comprises the steps of:

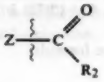
(a) reacting 2 equivalents of R_1Li wherein R_1 is as defined above with E being an acid labile blocking group with 1 equivalent of CuCN in an aprotic solvent under an inert atmosphere at a temperature of from −78° C. to 25° C. to form a reaction product;

(b) reacting the reaction product formed in step (a) with 1 equivalent of a substituted cyclopentenone of the structure:

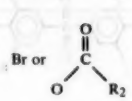


where Y is OH or OE, A is as defined above and X is as defined above where E at each occurance is an acid labile blocking group to form a reaction product;

(c) quenching with an aqueous solvent or an acylating agent of the formula:



where Z is Cl, Br or



and R_2 is as defined above; and

(d) optionally hydrolyzing the product of step (c) with dilute acid to remove the acid labile blocking groups and form the above-described product where E is H.

4,543,422

SYNTHESIS OF VINYL ESTERS

David Farrar, West Yorkshire, England, assignor to Allied Colloids Limited, England

Filed Oct. 20, 1983, Ser. No. 543,734
Claims priority, application United Kingdom, Oct. 26, 1982, 8230580
Int. Cl.[4] C07C *67/02*
U.S. Cl. 560—217 **13 Claims**

1. A process for making an ester of the formula R^3COOR^4, where R^3 is $CH_2{=}CH{-}$ or $CH_2{=}CCH_3{-}$ and R^4 contains at least four carbon atoms and is selected from alkyl, cycloalkyl and aminoalkyl, by reaction from a compound formula R^3COOR^1, where R^1 is $C_{1\text{-}3}$ alkyl, in the presence of metal alcoholate formed from an alcohol R^4OH, and in which the metal alcoholate provides the groups R^4 utilized in forming the ester and reacts with the compound R^3COOR^1, the reaction is conducted in the substantial absence of water or reactive alcohol and the metal is selected from titanium, aluminum, zirconium, calcium and magnesium; and wherein the metal alcoholate formed in the reaction is removed from the resulting reaction product mixture and reacted with excess alcohol R^4OH, in the substantial absence of compound R^3COOR^1, the metal alcoholate thus formed is recycled to the reaction.

4,543,423

HYDRATION OF NITRILES

David Farrar, and Peter Flesher, both of Bradford, England, assignors to Allied Colloids Limited, England

Filed Oct. 28, 1982, Ser. No. 437,385

Claims priority, application United Kingdom, Oct. 29, 1981, 8132660

Int. Cl.[4] C07C *102/08*

U.S. Cl. 564—128 10 Claims

1. In a process wherein a nitrile is hydrated to an amide in a deoxygenated reaction medium containing Raney copper catalyst; the improvement which comprises increasing catalyst activity by preoxidising the Raney copper catalyst, prior to contact with the reaction medium, with a controlled oxidising system comprising an oxidant selected from the group consisting of oxygen, peroxide, iodate, chlorate, bromate and nitrate to obtain Raney copper in a partially oxidised state ranging from about 0.1 to 30%, and then contacting the preoxidised Raney copper catalyst with the deoxygenated reaction medium.

4,543,424

PROCESS FOR PREPARING SUBSTITUTED FORMAMIDES

Harold E. Bellis, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 9, 1984, Ser. No. 598,184

Int. Cl.[4] C07C *102/00*

U.S. Cl. 564—215 3 Claims

1. In the process for catalytically preparing a substituted formamide, which process comprises

(A) bringing together, in an inert medium, under conditions suitable for reaction,

(1) a compound represented by the structure

where R and R_1 are alkyl radicals of 1–8 carbon atoms, aryl radicals of 6–10 carbon atoms, aralkyl radicals of 7–10 carbon atoms or alkaryl radicals of 7–10 carbon atoms, and R_1 can in addition be an alkyl radical containing a $—N(CH_3)R_2$ group in which R_2 can be hydrogen, an alkyl radical of 1–8 carbon atoms, an aryl radical of 6–10 carbon atoms, an aralkyl radical of 7–10 carbon atoms or an alkaryl radical of 7–10 carbon atoms, with the provisos that R and R_1 can be joined together to form an alkylene or azaalkylene group of 3–8 carbon atoms, and when R is alkyl or aralkyl, R_1 can be hydrogen;

(2) oxygen; and

(3) a catalytically effective amount of a combination of

(a) a soluble chloride, bromide or iodide of copper, cobalt, gold, iron, mercury, nickel, palladium, platinum, silver or zinc, and

(b) a chloride, bromide, or iodide of sodium, potassium, lithium or ammonium, and then

(B) recovering the substituted formamide product from the reaction mass, the improvement comprising including in the medium of (A) an effective amount of an adjunct which is one or more members selected from the group consisting of

(1) a primary alkylamine whose alkyl group contains 4–12 carbon atoms,

(2) urea or urea substituted with one or more alkyl radicals of 1–6 carbon atoms, and

(3) thiourea or thiourea substituted with one or more alkyl radicals of 1–6 carbon atoms.

4,543,425

1,3-DIAMINO-4-(2',2',2',-TRIFLUOROETHOXY)-BENZENE, METHOD OF PRODUCING THE SAME, AND HAIR COLORING COMPOSITION CONTAINING THE SAME

Eugen Konrad, Darmstadt, Fed. Rep. of Germany; Hans J. Braun, Marly; Herbert Mager, Fribourg, both of Switzerland; Friedrich Noser, Bonnefontaine, and Max Bracher, Albligen, both of Switzerland, assignors to Wella AG, Darmstadt, Fed. Rep. of Germany

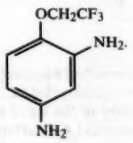
Filed Aug. 5, 1983, Ser. No. 521,165

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3229973

Int. Cl.[4] C07C *87/60*

U.S. Cl. 564—442 16 Claims

1. 1,3-diamino-4-(2',2',2'-trifluoroethoxy)-benzene of the formula I



(I)

4,543,426

HERBICIDAL COMPOUNDS

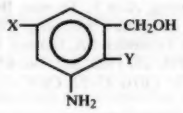
Kou-Chang Liu, Wayne, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed Jan. 9, 1984, Ser. No. 568,999

Int. Cl.[4] C07C *87/60*

U.S. Cl. 564—442 6 Claims

1. The process which comprises treating an undesirable plant species with an effective phytotoxic amount of a herbicide of the formula:



where X and Y are independently chlorine or trifluoromethyl.

4,543,427

PREPARATION OF CYCLOHEXANOL AND CYCLOHEXANONE

Juergen Hartig, Gruenstadt; Armin Stoessel, Frankenthal; Guenter Herrmann, Heidelberg, and Laszlo Marosi, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,134

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222144

Int. Cl.[4] C07C *45/53*

U.S. Cl. 568—342 3 Claims

1. In a process for the preparation of cyclohexanol and cyclohexanone by treating cyclohexyl hydroperoxide with a supported catalyst containing cobalt in oxidic form the improvement which comprises treating the cyclohexyl hydroperoxide at from 30° to 160° C. with a catalyst containing from 2 to 30% by weight, calculated as cobalt, of cobalt in oxidic form and from 3 to 16% by weight, calculated as sodium, of sodium in bound form, supported on a zeolite as the carrier.

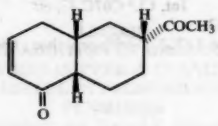
4,543,428

PRODUCTION OF A HEXAHYDRONAPHTHALENONE COMPOUND

Frank M. Hauser, Portland, and Dipakranjan Mal, Beaverton, both of Oreg., assignors to Oregon Graduate Center for Study & Research, Beaverton, Oreg.

Division of Ser. No. 474,491, Mar. 11, 1983, Pat. No. 4,481,143.
This application Jun. 8, 1984, Ser. No. 618,838
Int. Cl.[4] C07C *49/553*
U.S. Cl. 568—345 2 Claims

2. A method for synthesizing the compound having the formula



which comprises

acetylizing 2-(2-hydroxyethyl)bicyclo[2.2.2]oct-5-ene to furnish 2-(2-acetoxyethyl)bicyclo[2.2.2]oct-5-ene,

cleaving the olefinic entity in the latter acetate to give 2-(2-acetoxyethyl)cyclohexane-1,4-dicarboxylic acid,

converting the dicarboxylic acid to the diacid chloride 2-(3-acetoxyethyl)cyclohexane-1,4-dicarboxyl chloride,

reacting the dicarboxyl chloride with methyl copper to furnish the acetoxydiketone 2-(2-acetoxyethyl)-1,4-bis-(acetyl)-cyclohexane,

hydrolyzing the the acetoxydiketone with sodium hydroxide to give the lactol 6-acetyl-1-hydroxy-1-methyl-3,4,4a,5,6,7,8,8a-octahydro-1H-2-benzopyran,

oxidizing the lactol to produce 1,4-diacetyl-cyclohexane-2-acetaldehyde, and

cyclizing and dehydrating the latter to yield the object compound.

4,543,429

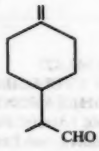
1(7)-P-MENTHEN-9-AL

Anthony F. Morris, Gingins; Francois Delay, Carouge; Fritz Gautschi, Commugny; Alan F. Thomas, Borex; Wolfgang K. Giersch, Bernex, and André Boschung, Gilly, all of, Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Feb. 28, 1983, Ser. No. 470,436
Int. Cl.[4] C07G *45/51*; C07C *47/225*
U.S. Cl. 568—446 2 Claims

1. 1(7)-p-Menthen-9-al of formula

(I)



4,543,430

PROCESS FOR THE PREPARATION OF ADDITION PRODUCTS OF EPOXIDES AND HYDROXYLATED COMPOUNDS

Daniel Falgoux, Aix en Provence; Danielle Simoulin, Meyreuil, and Michel Pascal-Mousselard, Aix en Provence, all of France, assignors to BP Chimie Societe Anonyme, Courbevoie, France

Filed Nov. 7, 1983, Ser. No. 549,571
Claims priority, application France, Nov. 17, 1982, 82 19231
Int. Cl.[4] C07C *41/03*
U.S. Cl. 568—678 10 Claims

1. Process for the preparation of addition products of expoxides and hydroxylated compounds, characterised by the fact that it comprises the reaction of an epoxide, selected from the group consisting of alkylene oxide and epichlorhydrin, and of a hydroxylated compound selected from the group consisting of an alcohol, an alkyleneglycol monoalkylether, a phenol compound and water, in a quantity such that the ratio of the hydroxylated compound/epoxide is comprised between 2 and 20 by weight, the reaction being carried out in a homogeneous liquid phase, at a temperature between 40° and 250° C., in the presence as catalyst selected from the group consisting of (a) tetra-alkylammonium triflate and (b) a trifluoromethanesulfonic acid salt of a metal selected from the group consisting of an alkali metal, a metal belonging to Group, II of the Periodic Table of Elements, aluminium, cobalt, nickel, zirconium and tin, in such a quantity that the catalyst concentration in the reaction mixture is comprised between 1 and 100 ppm by weight.

4,543,431

PROCESS FOR THE PREPARATION OF POLYUNSATURATED CYCLOALIPHATIC KETONES

Karl H. Schulte-elte, Onex; Roger L. Snowden, Grand-Lancy, and Bernard L. Muller, Geneva, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 391,995, Jun. 25, 1982, Pat. No. 4,479,011.
This application Feb. 14, 1984, Ser. No. 579,946
Claims priority, application Switzerland, Jul. 23, 1981, 4809/81
Int. Cl.[4] C07C *33/14*
U.S. Cl. 568—826 1 Claim

1. 2,5,6,6-Tetramethyl-1-[4-hydroxy-hepta-1,6-dien-4-yl]-cyclohex-2-ene.

4,543,432

SEPARATION OF ISOPROPYL ALCOHOL FROM TERTIARY BUTYL ALCOHOL BY SELECTIVE ADSORPTION

Tsung-Shen T. Shih, Morris Plains, N.J., and Eckhard R. Becker, Yardley, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 27, 1981, Ser. No. 258,114
Int. Cl.[4] C07C *29/76*
U.S. Cl. 568—917 1 Claim

1. A method for purifying a process stream of tertiary butyl alcohol containing isopropyl alcohol comprising the steps of:

(a) providing a macroporous carbon molecular sieve adsorbent having asymetric pores of lengths greater than 5 angstroms and widths of less than five and greater than about 3 angstroms, said adsorbent being characterized as having a bimodal distribution of pore sizes, about half of the pore volume consisting of transport pores of 100–300 angstroms in diameter and the remainder being slit-shaped openings four to six angstroms wide;

(b) contacting said adsorbent with said process stream to selectively adsorb isopropyl alcohol from said process stream.

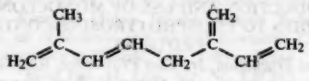
4,543,433

TETRAENE, ITS PREPARATION AND ITS USE

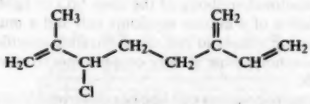
Gerard Mignani, Lyons, and Didier Morel, Villiers Sur Orge, both of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Jan. 23, 1985, Ser. No. 694,077
Claims priority, application France, Jan. 26, 1984, 84 01198
Int. Cl.[4] C07C *1/30, 11/21*
U.S. Cl. 585—16 7 Claims

1. 2-Methyl-6-methylene-1,3,7-octatriene of formula:



2. A process for preparing 2-methyl-6-methylene-1,3,7-octatriene as claimed in claim 1, which comprises dehydrochlorinating 3-chloro-2-methyl-6-methylene-1,7-octadiene of formula:



in the presence of a catalyst based on divalent palladium or on palladium(O) combined with a ligand and of an inorganic base.

4,543,434

PROCESS FOR PRODUCING LIQUID HYDROCARBON FUELS

Clarence D. Chang, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 28, 1981, Ser. No. 229,245
Int. Cl.⁴ C07C *15/02, 19/00*
U.S. Cl. 585—310 **6 Claims**

1. A catalytic process for converting coal to a liquid hydrocarbon fuel and hydrogen mixture comprising the sequential steps of:

(a) contacting said coal with sulfur thereby forming a product comprising carbon disulfide;

(b) contacting the carbon disulfide with water thereby forming a product comprising a carbonyl sulfide fraction and a hydrogen sulfide fraction;

(c) disproportionating the carbonyl sulfide fraction into a product comprising carbon dioxide and carbon disulfide, and removing the carbon disulfide as a separate product;

(d) hydrogenating the carbon disulfide in the presence of a ZSM-5 type zeolite catalyst at a temperature of between about 400° and about 1200° F. and at a pressure of between about 0 and about 200 psig and separating the reaction product into a hydrogen sulfide fraction and as a desired product a hydrocarbon fraction;

(e) contacting said hydrogen sulfide fraction of (d) with one or more metals selected from the group consisting of Group VI-B and Group VIII metals thereby forming a metal sulfide and hydrogen at a temperature of between about ambient and about 500° F. and at a pressure of between about 0 and about 2000 psig; and

(f) recovering said metal sulfide of (e) and thermally decomposing it at a temperature of about 500 to about 2000° F. into a metal and elemental sulfur.

2. A catalytic process for converting natural gas comprising primarily methane to a liquid hydrocarbon fuel mixture and hydrogen comprising the sequential steps of:

(a) contacting said natural gas with sulfur thereby forming a reaction mixture of carbon disulfide and hydrogen sulfide;

(b) contacting the carbon disulfide with hydrogen in the presence of a ZSM-5 type catalyst, thereby forming a product mixture of hydrocarbons and hydrogen sulfide;

(c) separating the hydrocarbons as a desired product, and contacting said hydrogen sulfide product of (b) with one or more metals selected from the groups consisting of Group VI-B and Group VIII metals thereby forming a metal sulfide and hydrogen at a temperature of between about ambient and about 500° F. and a pressure of between 0 and about 2000 psig; and

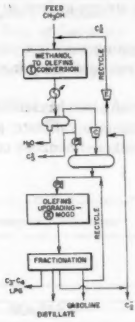
(d) recovering said metal sulfide of (c) and thermally decomposing it at a temperature of about 500° to about 2000° F. into a metal and elemental sulfur.

4,543,435

MULTISTAGE PROCESS FOR CONVERTING OXYGENATES TO LIQUID HYDROCARBONS WITH ETHENE RECYCLE

Ronald M. Gould, Sewell, and Samuel A. Tabak, Wenonah, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 17, 1985, Ser. No. 692,261
Int. Cl.⁴ C07C *5/00*
U.S. Cl. 585—330 **20 Claims**



1. An integrated continuous process for converting oxygenated organic feedstock to liquid hydrocarbons comprising the steps of

(a) contacting feedstock with zeolite catalyst in a primary catalyst stage at elevated temperature and moderate pressure to convert at least a portion of the feedstock oxygenate to hydrocarbons containing a major fraction of C_2–C_4 olefins and a minor fraction containing C_5^+ hydrocarbons;

(b) cooling and separating effluent from step (a) to provide an aqueous liquid byproduct stream, a heavy hydrocarbon liquid stream and a light hydrocarbon vapor stream rich in C_2–C_4 olefins;

(c) compressing at least a portion of the olefinic light hydrocarbon stream to condense a liquid olefinic hydrocarbon stream rich in C_3^+ olefins and recovering an ethene-rich gaseous stream;

(d) further pressurizing and contacting substantially all of the condensed liquid olefinic hydrocarbon stream from step (c) in a secondary catalytic stage with oligomerization catalyst comprising medium-pore shape selective acidic zeolite at substantially increased pressure and moderate temperature to convert at least a portion of olefins to a heavier liquid hydrocarbon product stream comprising olefinic gasoline and distillate range liquids; and

(e) recovering ethene in a gaseous stream for recycle to the primary catalytic stage.

4,543,436

CHROMIUM PHOSPHATE AS AN ALKYLATION CATALYST

Marvin M. Johnson, and Gerhard P. Nowack, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 9, 1984, Ser. No. 578,394
Int. Cl.⁴ C07C *2/68*
U.S. Cl. 585—466 **9 Claims**

1. A process for the alkylation with alcohols of aromatics which comprises contacting said aromatics with said alcohol in the presence of a mixture of Cr^{+3} and a phosphate chosen from at least one of PO_4^{-3} and HPO_4^{-2}.

4,543,437

REFINING OF TERTIARY BUTYLSTYRENE

James D. Henery; Stephen C. McHaney, and Charles L. Edwards, all of Odessa, Tex., assignors to El Paso Products Company, Odessa, Tex.

Filed Dec. 24, 1984, Ser. No. 685,929
Int. Cl.[4] C07C 7/10
U.S. Cl. 585—857 5 Claims

1. A process for the removal of dialkenylbenzene contaminants from a t-butylstyrene stream comprising:

introducing said stream as feed to a liquid/liquid extraction zone;

intimately contacting said feed in said zone with aqueous sulfolane solvent containing from about 3 to about 30 wt. % water;

recovering refined t-butylstyrene depleted in dialkenylbenzene contaminants as raffinate; and recovering an extract enriched in dialkenyl benzene contaminants.

4,543,438

TERTIARY-BUTYLSTYRENE RECOVERY

James D. Henery; Charles L. Edwards, and Stephen C. McHaney, all of Odessa, Tex., assignors to El Paso Products Company, Odessa, Tex.

Filed Dec. 24, 1984, Ser. No. 685,930
Int. Cl.[4] C07C 7/10
U.S. Cl. 585—857 3 Claims

1. A process for the separation of t-butylstyrene from an oxidative dehydrogenation zone effluent containing t-butylethylbenzene and t-butylstyrene comprising:

introducing said effluent as feed to a liquid/liquid extraction zone;

intimately contacting said feed in said zone with aqueous sulfolane solvent containing from about 2 to about 10 wt. % water;

recovering t-butylethylbenzene as raffinate, and recovering an extract containing t-butylstyrene.

4,543,439

PRODUCTION AND USE OF MONOCLONAL ANTIBODIES TO PHOSPHOTYROSINE-CONTAINING PROTEINS

A. Raymond Frackelton, Jr., East Providence, R.I.; Herman N. Eisen, Waban, Mass., and Alonzo H. Ross, Bensalem, Pa., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 13, 1982, Ser. No. 449,355
Int. Cl.[4] C12N 15/00; G01N 33/54, 33/56, 33/60
U.S. Cl. 935—92 32 Claims

1. A monoclonal antibody of the class IgG or IgM, derived from the fusion of a murine myeloma cell and a murine antibody-producing lymphoid cell, demonstrating specific reactivity to a phosphotyrosine moiety on phosphotyrosine-containing proteins.

7. A murine hybridoma cell line characterized by its production of monoclonal antibodies of the class IgG or IgM demonstrating specific reactivity to a a phosphotyrosine moiety on phosphotyrosine-containing proteins.

13. An antibody-producing cell line having the identifying characteristics of ATCC HB 8190.

4,543,440

CURABLE COMPOSITION COMPRISING ELASTOMERIC TERPOLYMER OF CARBON MONOXIDE

Gary L. Loomis, Drexel Hill, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 472,752, Mar. 7, 1983, abandoned. This application Mar. 9, 1984, Ser. No. 587,901
Int. Cl.[4] C08G 67/02
U.S. Cl. 525—539 14 Claims

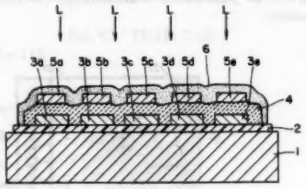
1. A curable composition comprising an elastomeric terpolymer of ethylene with carbon monoxide and with another ethylenically unsaturated monomer, in which ketone carbonyl concentration is about 5–20% of the polymer weight and a curing system for said polymer consisting essentially of about 0.15 to 8.0 mole % of an aromatic primary diamine based on the ketone carbonyl groups or an equivalent amount of a precursor which will liberate free diamine under the cure conditions, and a catalytic amount of an acid having a pKa of at most about 3 or a precursor capable of liberating an equivalent amount of such acid under the cure conditions.

4,543,441

SOLAR BATTERY USING AMORPHOUS SILICON

Masaharu Kumada; Hideo Tanabe; Katsuo Yuhara; Akira Misumi, all of Mobara, and Hiroshi Kawasaki, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,597
Claims priority, application Japan, Feb. 14, 1983, 58-21495
Int. Cl.[4] H01L *31/06*
U.S. Cl. 136—249 15 Claims



1. An amorphous silicon solar battery comprising a substrate and formed thereon at least one pair of opposed light incident transparent electroconductive and back electrodes sandwiching an amorphous silicon layer, at least a major surface of said back electrode being in contact with an organic resin layer and being made of at least one member selected from the group consisting of a compound of at least one transition metal and silicon, a compound of at least one transition metal and nitrogen, and a compound of at least one transition metal and carbon.

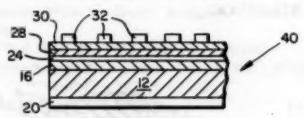
11. A solar battery according to claim 1, wherein the substrate is a flexible metal plate coated with a heat resistant organic resin layer and the back electrode is formed on said heat resistant resin layer.

4,543,442

GAAS SCHOTTKY BARRIER PHOTO-RESPONSIVE DEVICE AND METHOD OF FABRICATION

George E. Alcorn, Reston, Va.; Charles Z. Leinkram, Bowie, Md., and Olatunji Okunola, Orlando, Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 24, 1983, Ser. No. 507,625
Int. Cl.[4] H01L *31/06*
U.S. Cl. 136—255 8 Claims



1. A photo-responsive device, comprising:

a gallium arsenide substrate (12) having an n+ type majority charge carrier concentration and a pair of opposed surfaces (14, 18);

an epitaxial layer (16) of gallium arsenide having an n type majority charge carrier concentration formed upon a first of said surfaces;

first means (20) disposed upon a second of said surfaces for providing electrical contact with said substrate;

a thin, transparent insulating layer (24) of an oxide covering said epitaxial layer;

a thin, transparent layer (28) of a refractory metal deposited upon said layer of oxide;

a thin, transparent layer (30) of a noble metal deposited upon said refractory metal layer;

said refractory metal having a high thermionic work function approximating that of said noble metal; and

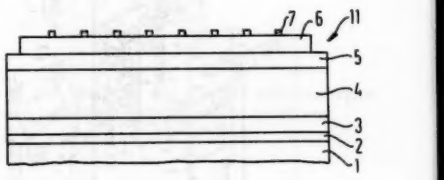
second means (32) disposed upon said noble metal layer for providing electrical contact with said noble metal.

4,543,443

METHOD FOR MANUFACTURING FINGER ELECTRODE STRUCTURES FORMING ELECTRIC CONTACTS AT AMORPHOUS SILICON SOLAR CELLS

Matthias Moeller, and Helmold Kausche, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,597
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1982, 3242791
Int. Cl.[4] H01L *31/04, 31/18*
U.S. Cl. 136—256 8 Claims



7. A solar cell structure comprising:

a substrate comprising layers of amorphous silicon having p type, intrinsic, and n type conductivity respectively,

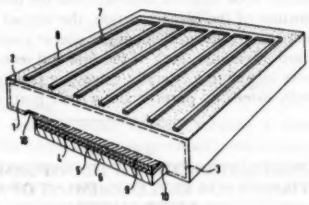
an indium-tin oxide layer over said layers on the substrate, and finger type electrodes deposited on said indium-tin oxide layer, said electrodes having a base layer of a nickel-chromium alloy, an intermediate layer of substantially pure nickel, and an outer layer of a tin-lead-silver solder alloy.

4,543,444

SOLAR-CELL

Klaus-Dieter Rasch, Talheim, and Helmut Flödl, Bad Friedrichshall, both of Fed. Rep. of Germany, assignors to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Apr. 18, 1984, Ser. No. 601,442
Claims priority, application Fed. Rep. of Germany, May 5, 1983, 3316417
Int. Cl.[4] H01L *31/06, 31/18*
U.S. Cl. 136—256 5 Claims



1. A solar cell comprising a wafer-shaped semiconductor member of first conductivity type, said semiconductor member having a rear side with a rear side contact affixed thereto and having a front side with a conduction path system affixed thereto as a front side contact, wherein a region (2) of second conductivity type is disposed on all sides of the semiconductor member (1) of first conductivity type to form a pn-junction, wherein the rear side contact (4, 5, 6) ohmically contacts the

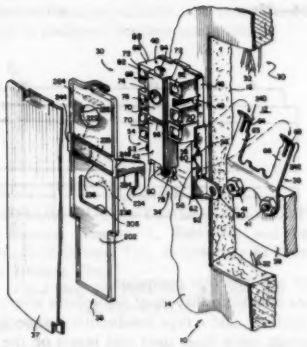
semiconductor member (1) of first conductivity type by penetrating the region (2) of the second conductivity type and consists, starting from the semiconductor member, of the layer sequence titanium-palladium-silver, and wherein the pn-junction is severed on said rear side of said semiconductor member along a path that surrounds said rear side contact.

4,543,445

THERMOSTAT COVER

Donald R. Turner, Shelbyville, Ind., assignor to Williams Industries, Inc., Shelbyville, Ind.

Filed Feb. 10, 1984, Ser. No. 579,014
Int. Cl.[4] H02B *1/14;* H01R *13/44;* H05K *5/03*
U.S. Cl. 174—5 R **10 Claims**



1. An electrically insulative shield for covering and engaging a device in an electrical circuit having a top surface, at least three side surfaces, and at least three projections adjacent the device, a first projection extending outwardly from a first side surface, a second projection extending outwardly adjacent a second side surface and a thrid projection extending outwardly adjacent a third side surface, the shield comprising

a generally planar portion bounded by an outside edge having first, second and third outside edge portions,

a first gripping member extending outwardly from the planar portion, the gripping member including an apertured portion for receiving the first projection,

a first gripping hook member disposed near the second outside edge portion, and extending outwardly from the planar portion to grip the second projection, and

a second hook member disposed near the third outside edge portion of the planar portion, the second hook member extending outwardly from the planar portion to grip the third projection, each of the first and second hook members including a laterally extending portion, a longitudinally extending portion, and a fluke portion.

4,543,446

VAPORIZATION-COOLED TRANSFORMER HAVIG PROVISIONS FOR REPLENISHMENT OF MOLECULAR SIEVE MATERIAL

Stephen D. Foss, and Giovanni Colantuoni, both of Pittsfield, Mass., assignors to General Electric Company, King of Prussia, Pa.

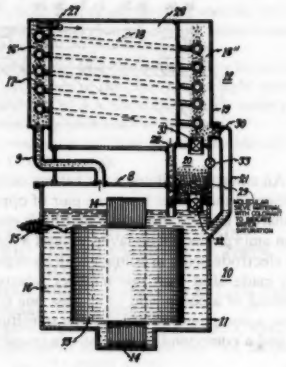
Filed Feb. 9, 1981, Ser. No. 232,857
The portion of the term of this patent subsequent to Jun. 24, 2000, has been disclaimed.
Int. Cl.[4] H01F *27/10*
U.S. Cl. 174—11 R **3 Claims**

1. In a vaporization-cooled transformer having a transformer tank, a heat exchanger and an internal condensate return path for conveying condensed dielectric coolant from the heat exchanger to the tank, the combination comprising:

a container located in the condensate return path, said container including an inlet communicating with the heat exchanger and an outlet communicating with the transformer tank;

a quantity of molecular sieve material accommodated in said container;

separate valve means in said inlet and outlet for controlling the flow of condensed dielectric coolant through said container;



a bypass conduit connected between the heat exchanger and the transformer tank;

additional valve means in said conduit for controlling the flow of condensed dielectric coolant therethrough; and

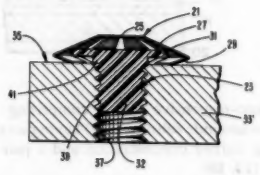
a valved opening in said container affording access from externally of the transformer to said molecular sieve material for the replenishment thereof while said container remains in situ and isolated from the condensate return path by said valve means and said bypass conduit.

4,543,447

ELECTROMAGNETIC SHIELDING DEVICE

Ronald W. Brewer, Bushhill, Pa., assignor to Instrument Specialties Co., Inc., Delaware Water Gap, Pa.

Filed May 10, 1983, Ser. No. 493,159
Int. Cl.[4] H05K *9/00*
U.S. Cl. 174—35 GC **9 Claims**



1. An arrangement for electromagnetic shielding of two adjacent relatively movable members having opposed surfaces with a space therebetween, the arrangement comprising at least one individual shielding element arranged on one of said surfaces, each shielding element comprising a generally circular resilient cap portion having a plurality of radially extending segments and resilient tongues extending radially inwardly from an outer end of each of the segments to define a semi-closed, generally annular space between the segments and the tongues and means for retaining said cap portion on said one of said surfaces, said cap portion overlying said retaining means.

4,543,448

ELECTRICAL CORD SET HAVING A MAGNETICALLY IDENTIFIABLE CONDUCTOR, AND A METHOD OF AUTOMATICALLY MANUFACTURING SUCH A CORD SET

Johannis M. Deurloo, Emmen, Netherlands, assignor to N. K. F. Groep B.V., Netherlands

Continuation of Ser. No. 362,000, Mar. 25, 1982, abandoned. This application May 23, 1984, Ser. No. 613,750

Claims priority, application Netherlands, Mar. 30, 1981, 8101540

Int. Cl.⁴ H01B *7/36*

U.S. Cl. 174—112 **2 Claims**

1. An electrical cord set comprising a plural stranded-conductor cord and a plural connection plug, respective conductors being connected to respective plug connection elements, one of said connection elements having an identifying characteristic used for orientation of the plug,

characterized in that said one connection element is connected to one conductor characterized by having a magnetic permeability different from that of the other conductors, said one conductor comprising a plurality of strands substantially identical to strands of the other conductors and auxiliary means for causing the magnetic permeability of said one conductor to be different from that of the other conductors.

4,543,449

SUPERCONDUCTING WIRE AND METHOD OF PRODUCING THE SAME

Kunishige Kuroda, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 556,048

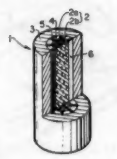
Claims priority, application Japan, Dec. 1, 1982, 57-209357

Int. Cl.⁴ H01B *12/00*

U.S. Cl. 174—126 S **13 Claims**

1. A superconducting wire comprising a core region of a superconducting material, an outermost region of a normal-conducting material for stabilizing said superconducting material, and at least one intermediate region disposed between said core region and said outermost region and containing a paramagnetic salt for increasing the heat capacity at cryogenic temperature range, wherein said intermediate region includes layers of said paramagnetic salt and a normal-conducting material which are arranged alternatingly in the longitudinal or circumferential direction of said superconducting wire.

10. A method of producing a superconducting wire comprising the steps of forming an outermost region and an intermediate region as a unit with each other, said outermost region being formed of a normal-conducting material and said intermediate region being formed of layers of a paramagnetic salt and a normal-conducting material which are arranged alternatingly in the longitudinal or circumferential direction of said superconducting wire, said unit of the outermost region and intermediate region being formed to accommodate a core region therein; forming a core region including a superconducting material; and combining said unit and said core region, with said core region being accommodated in said unit.



4,543,450

INTEGRATED CONNECTOR AND MODEM

Randy Brandt, 1607 Dressage, Orange, Calif. 92669

Continuation-in-part of Ser. No. 433,817, Jan. 3, 1983, abandoned. This application Jan. 18, 1984, Ser. No. 571,867

Int. Cl.⁴ H04M *11/00*

U.S. Cl. 179—2 C **8 Claims**

1. A data communication device which comprises:

a connector housing;

a portion of said connector housing forming a terminal connector for physically and electrically connecting said connector housing to an input/output interface port of a data terminal or a computer;

together said connector housing and said terminal connector sized and shaped so as to be supportable on said interface port by said terminal connector;

a modem means sized and shaped so as to be located in the interior of said connector housing in direct electrical association with said terminal connector;

a phone cable having ends, one of said ends attachable to said connector housing in electrical association with said modem means, the other of said ends including a phone connector plug means for electrically connecting said cable to a modular telephone set.

4,543,451

SEAT FOR A CORDLESS TELEPHONE

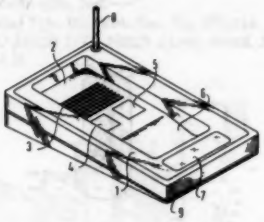
Siegfried Schoen, Starnberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 589,954

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1983, 3309877

Int. Cl.[4] H04Q 7/04; H04M 1/04

U.S. Cl. 179—2 EA 12 Claims



1. In a stationary station for seating a cordless telephone, wherein the improvement comprises a trough-like recess corresponding in shape to a shape of the cordless telephone, and wherein a loudspeaker, a microphone, and operating keys are positioned in the recess.

4,543,452

APPARATUS FOR THE STORING AND RECOVERY OF INFORMATION, SUBSCRIBER'S NUMBERS, SUBSCRIBER'S ADDRESSES, ETC.

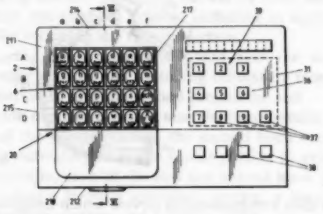
Heiko Ippen, Krefeld, Fed. Rep. of Germany, assignor to Confon AG, Rheineck, Switzerland

Filed Feb. 23, 1983, Ser. No. 469,135

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 8205000[U]; Feb. 23, 1982, 8205001[U]; Feb. 17, 1983, 3304772

Int. Cl.[4] H04M 1/274

U.S. Cl. 179—90 B 40 Claims



6. Apparatus for the storing and recovery of information, like subscriber's numbers and subscriber's addresses, characterized in that in a casing (2) a register card selection and release device (20, 20*a*, 20*b*) is provided, comprising:

an extendable and retractable drawer (802) arranged in the casing (2) with a stack (9) of register cards (801) with selection cutouts (820) and with a depression (816) formed in the drawer bottom for separating the selected register card from the register cards left behind in the casing (2) and for transferring the selected card into an extension plane by means of selection keys (807) combined into a keyboard (6), and with dogs (806), and furthermore

a device (30) arranged within said casing for automatically dialing stored subscriber's numbers connectable to a telephone, and which is provided with a subscriber's number storage unit (31) having a keyboard (36), figures keys (37), and operating keys (38).

4,543,453

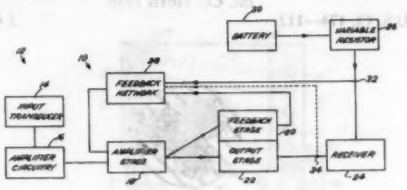
ELECTRONIC HEARING AID CONTROL CIRCUIT

Richard Brander, Cicero, Ill., assignor to Beltone Electronics Corporation, Chicago, Ill.

Filed Mar. 30, 1983, Ser. No. 480,454

Int. Cl.[4] H03F 1/30

U.S. Cl. 179—107 R 12 Claims



1. A hearing aid control circuit for setting a predetermined maximum sound pressure level that a hearing aid will produce in response to a large electric input signal comprising, in combination:

power source means for providing electric power to said hearing aid control circuit;

amplifier means for receiving said electric input signal and producing an amplified signal in response thereto;

feedback stage means, interconnected to said amplifier means, for receiving said amplified signal and producing a feedback signal in response to said amplified signal, said feedback signal including a feedback current;

output stage means, interconnected to said amplifier means, for receiving said amplified signal and producing an output signal in response to said amplified signal, said output signal defining a maximum output signal level and including an output current;

current regulator means, cooperatively defined by said feedback stage means and output stage means, for maintaining said feedback and output currents in a substantially proportional relationship, whereby said output current may be monitored by sensing said feedback current;

output transducer means, interconnected to said output stage means, for receiving said output signal and responsively providing an acoustic output;

a variable resistor, having a variable setting and interconnected between said power source means and said output transducer means, for adjustably limiting said maximum output signal level applied to said output transducer means; and

feedback line means, interconnecting said feedback stage means and variable resistor to said amplifier means, for exerting control over said output signal, said control being dependent upon said setting of said variable resistor.

4,543,454

SLIDE ACTION ELECTRICAL SWITCHES

Albert R. Cobb, III, Glenview, and Charles E. Black, Mt. Prospect, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Filed Dec. 12, 1983, Ser. No. 560,757

Int. Cl.[4] H01H 15/04

U.S. Cl. 200—16 A 9 Claims

1. An electrical switch, comprising

a casing,

an electrically insulating carriage movable in said casing,

means on said casing and said carriage for guiding said carriage for sliding movement along a substantially linear path,

an electrically conductive contactor plate mounted on said carriage and movable therewith along said path,

said casing having an insulating wall member generally parallel with said path,

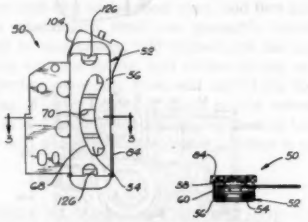
spring means between said carriage and said contactor plate for biasing said contactor plate toward said insulating wall member,

and first and second electrically conductive elongated contact bars spaced apart from each other and separtely mounted on said insulating wall member while extending along and parallel with portions of said path,

said contact bars being insulated from each other,

said contactor plate having first and second contact points formed thereon and projecting therefrom for slidably engaging said first and second bars during movement of said contactor plate along said portions of said path,

said insulating wall member having insulating boss portions projecting thereform and flush with said contact bars for



slidable engagement by said first and second contact points during the remainder of said path,

said contactor plate having a third contact point formed thereon and projecting therefrom towards said insulating wall member,

said insulating wall member having an insulating ridge projecting therefrom and flush with said first and second contact bars while extending between said contact bars for slidable engagement by said third contact point,

said third contact point being slidable along said insulating ridge between said contact bars without ever engaging said contact bars,

said third contact point and said first and second contact points affording tripod support for said contactor plate relative to said insulating wall member and said contact bars to provide positional stability for said contactor plate throughout the range of movement thereof along said path.

4,543,455

EXPLOSION-PROOF SWITCHING INSTALLATION WITH A BUS BAR DUCT

Kurt Pollerspöck, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,448

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1982, 3221900

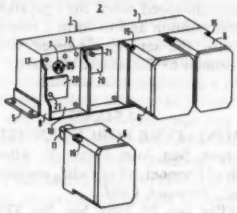
Int. Cl.⁴ H01H *27/00*

U.S. Cl. 200—50 B **2 Claims**

2. In an electric switching installation of explosion-proof design with a bus bar duct on the input side and switching and control devices accommodated in housings designed to meet the requirements of the protective class "explosion-proof enclosure", wherein an explosion-proof plug connection, having a plug part and a jack part, and a safety element for the mutual locking of both parts, are arranged between each housing and the bus bar duct, wherein the safety element prevents removal of said housing from said bus bar duct when voltage is present in the bus bar duct, the improvement comprising:

(a) the jack parts arranged on the bus bar duct, and the plug parts on the housings;

(b) the safety element formed by a threaded insert and an end switch mounted on said bus bar duct next to each jack part and a fastening screw on each enclosure, cooperating with the threaded insert to mechanically connect said housings to said bus bar duct and after such connection is made, actuating said end switch such as to effect voltage supply to the bus bar duct when said housing is connected to said bus bar duct and to cut off voltage supply when said housing is removed from said bus bar duct; and



(c) a protective lid movable fastened at the bus bar duct near the jack pat, said lid in its rest position exposing the jack part and in its operating position covering the jack part and said lid having a passage opening for a screw for cooperating with said threaded sleeve and said end switch.

4,543,456

SWITCH DEVICE FOR VEHICLE-SPEED CONTROL

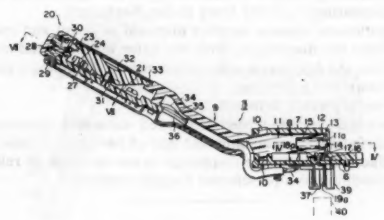
Masayosi Iwata, Gifu; Harumi Douke, and Hiroyuki Sawada, both of Aichi, all of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Apr. 21, 1983, Ser. No. 487,146

Claims priority, application Japan, Apr. 23, 1982, 57-59898[U]

Int. Cl.⁴ H01H *9/00*

U.S. Cl. 200—61.54 **7 Claims**



1. A switch unit for a vehicle-speed control device for automatic running of a vehicle detachably mounted on a base supporting a turn-signal switch lever, which base is fixed to the steering column tube of vehicle, comprising:

(a) an insulator provided with a connecting portion detachably mounted on the base;

(b) a switch body for covering the insulator, fixed thereto;

(c) an operation lever including a lever portion for operation by the occupant and a holder member formed at one end of the lever portion integrally therewith, the operation lever being supported at an axial portion of the holder member by the insulator and the switch body rotatably between a first position and a second position;

(d) an automatic restoring means disposed between the forward end portion of the holder member and the switch body, for forcing the operation lever in a neutral position between the first position and the second position;

(e) a set switch mounted on the lever portion of the operation lever, for forming a set circuit of the vehicle-speed control device for setting the vehicle-speed of the automo-

bile at a value selected by the occupant operating the set switch; and

(f) a switch mechanism including a movable contact supported on a face of the holder portion opposite the insulator and three fixed contacts fixed to the insulator about the rotation axis of the operation lever, the movable contact bridging two of the three fixed contacts to form a coast circuit of the vehicle-speed control device for restoring the set vehicle-speed when the operation lever is rotated to the first position and to form a resume circuit thereof for reducing the set vehicle-speed when the operation lever is rotated to the second position.

4,543,457

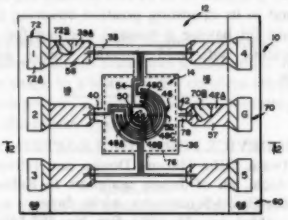
MICROMINIATURE FORCE-SENSITIVE SWITCH

Kurt E. Petersen, San Jose; Henry V. Allen, and James W. Knutti, both of Fremont, all of Calif., assignors to Transensory Devices, Inc., Fremont, Calif.

Filed Jan. 25, 1984, Ser. No. 573,509

Int. Cl.[4] H01H *35/34*

U.S. Cl. 200—83 N **29 Claims**



26. A passive, microminiature diaphragm switch comprising

a silicon wafer having a reduced-thickness, deflectable diaphragm adapted to move from a relaxed condition toward increasing bulged conditions upon the application of an increasingly greater force to the diaphragm,

a stationary contact member disposed adjacent and spaced from the diaphragm, with the latter in its relaxed condition, the diaphragm and contact member defining a pair of confronting surfaces,

a pair of switch terminals, and

electrical contact means associated with said confronting surfaces for connecting said pair of switch terminals conductively when the diaphragm is moved from its relaxed condition to a preselected bulged condition.

4,543,458

SWITCH AND CONNECTOR ASSEMBLY INCLUDING PROTECTIVE HOUSINGS FOR JUMPER CABLE

Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Sentrol, Inc., Portland, Oreg.

Filed Aug. 24, 1984, Ser. No. 644,319

Int. Cl.[4] H01H *3/16, 36/00*

U.S. Cl. 200—61.7 **16 Claims**

8. A combined switch assembly and connector for connecting one portion of a security alarm electrical circuit to another portion of such a circuit, comprising:

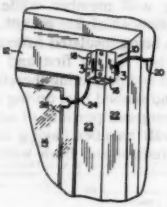
(a) a first terminal housing, adapted for being mounted on a door and including means for defining a mounting place for a magnet;

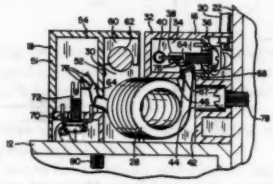
(b) a second terminal housing, adapted for being mounted on a doorway frame and including means for defining a switch cavity therein;

(c) an elastically resilient cable having a pair of opposite cable ends and including at least one electrical conductor, said cable having a relaxed configuration in which said cable has a predetermined relaxed length, and said cable being elastically extensible to a substantially increased length, said opposite cable ends of said cable being fixedly connected respectively to said first and second terminal housings;

(d) a magnetically actuated switch fixedly located within said switch cavity;

(e) an actuating magnet fixedly attached to said first terminal housing in said mounting place; and





(f) said first and second housings having portions cooperatively defining a cable cavity enclosing said cable, with said cable substantially in said relaxed configuration, when said housings are mounted respectively on said door and said doorway frame.

4,543,459

SMALL-SIZED SWITCH

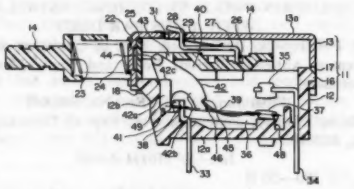
Kenji Hayashida, Muko, Japan, assignor to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Dec. 5, 1983, Ser. No. 558,251

Claims priority, application Japan, Dec. 20, 1982, 57-193428[U]

Int. Cl.[4] H01H *5/18*

U.S. Cl. 200—67 D **12 Claims**



1. A switch comprising:

(a) a casing of rectangular parallelepiped configuration;

(b) first and second terminals projecting into and out of said casing and mounted on said casing in spaced, mutually insulated relation, said second terminal having a fixed contact;

(c) a movable contact member mounted in said casing and extending between said first and second terminals, said movable contact member having one end engaging said first terminal and a movable contact on an opposite end, said movable contact member including an integral arcuate leaf spring extending toward said first terminal;

(d) an actuator mounted on said casing for movement into

and out of the casing in a direction in which said first and second terminals are spaced; and

(e) a rocker rockably mounted in said casing adjacent to said first terminal and having a portion held in engagement with a free end of said leaf spring for urging said movable contact member toward said second terminal, said rocker being held in engagement with said actuator in said casing and rockably movable in response to movement of said actuator, the arrangement being such that said movable contact can be brought into and out of electric contact with said fixed contact when said portion of said rocker is moved across a line passing through said one end of said movable contact member and said movable contact;

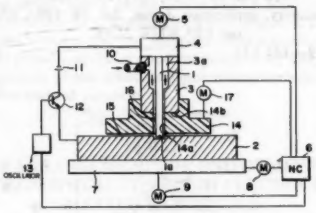
(f) said rocker comprising a bifurcated configuration composed of first and second arms joined at an end of the rocker, said first terminal having an inner end disposed between said first and second arms, said first arm having an end substantially fitted and pivotably movable in a receiver in said casing, said second arm having an end engaging said leaf spring, said rocker having an engagement portion extending from said end of the rocker and engaging in an engagement space in said actuator positioned in said casing, said engagement portion being movable in said direction in which said actuator is movable.

4,543,460

GENERIC ELECTRODE EDM METHOD AND APPARATUS, AND ASSEMBLY FOR MAINTAINING CHIP CONCENTRATION IN THE GAP AT AN ENHANCED LEVEL

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 23, 1983, Ser. No. 469,138
Claims priority, application Japan, Feb. 25, 1983, 57-29720
Int. Cl.⁴ B23P 1//12
U.S. Cl. 219—69 M **12 Claims**



1. An EDM method of machining a desired pattern in a conductive workpiece with at least one tool electrode having a machining surface contour which is of a configuration generally independent of the shape of the desired pattern, the method comprising the steps of:

(a) axially juxtaposing said tool electrode with the workpiece to position said machining surface contour in a spaced juxtaposition therewith across an EDM gap supplied with an EDM liquid;

(b) disposing a bored block member having a central bore and a frontal surface surrounding said central bore in the proximity of the workpiece so that at least a portion of the tool electrode proximate to said machining surface contour is situated in said bore and said frontal surface is spaced from said workpiece with a distance not less than the width of said EDM gap;

(c) electrically insulating said block member both from said tool electrode and said workpiece;

(d) producing a succession of electrical discharges across the EDM gap to electroerosively remove stock from a localized portion of said workpiece juxtaposed with said machining surface contour while permitting machining products produced by the electrical discharges to be accumulated in the EDM gap for removal therefrom; and

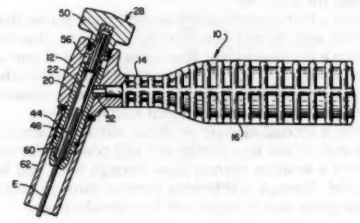
(e) mechanically impeding, with said frontal surface of the block member so disposed and arranged as defined in steps (b) and (c), the removal of the machining products from the EDM gap so that the concentration of the machining products in the EDM liquid in the EDM gap is maintained in excess of a predetermined level to stabilize said electrical discharges while effecting a multi-axial machining feed displacement between the tool electrode and the workpiece along a predetermined three-dimensional path defined by three coordinate axes including a pair of coordinate axes defining a plane substantially orthogonal to the longitudinal axis of said tool electrode and a coordinate axis substantially orthogonal to said plane and maintaining said EDM gap substantially constant, thereby three-dimensionally machining said workpiece at least in part by said stabilized electrical discharges to form the desired pattern in the workpiece.

4,543,461

GAS SHIELDED ARC TORCH AND COLLET ASSEMBLY

Clifford W. Hill, Florence, S.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 29, 1983, Ser. No. 566,830
Int. Cl.⁴ B23K 9/28
U.S. Cl. 219—75 **7 Claims**



1. A gas shielding arc torch comprising a torch head surrounding a collet assembly including a collet body and a collet for gripping and positioning an electrode within said torch head and a removable torch cap for locking said collet within said collet body wherein said collet body has a bore within which said collet is disposed, a forward end having in cross section tapered surfaces forming a first vee with an included angle of between 30–75 degrees for engaging one end of said collet and a rearward end for engaging said torch cap, with said torch cap having in cross section tapered surfaces which form a second vee for engaging the opposite end of said collet, said second vee being disposed opposite to said first vee to form the mirror image thereof and having an included angle substantially larger than the included angle formed by said first vee and wherein said collet is a cylindrical hollow tube having squared off ends with one squared off end engaging the first vee and with the other squared off end engaging the second vee and having at least two slots extending from one of said squared off ends with the slotted end adapted to be positioned adjacent the forward end of said collet body.

4,543,462

METHOD FOR ESTABLISHING A GALVANIC BOND BETWEEN AN INSULATED WORK PIECE AND A WELDING ELECTRODE AND AN ELECTRODE ARRANGEMENT FOR THE EXECUTION AND ITS USE

Jame Rossell, Lausanne, Switzerland, assignor to Rossell Electronique SA, Switzerland

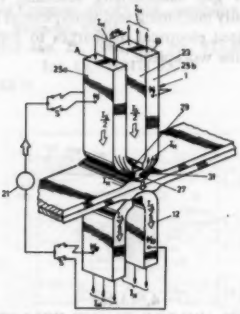
PCT No. PCT/CH81/00051, § 371 Date Jan. 8, 1982, § 102(e) Date Jan. 8, 1982, PCT Pub. No. WO81/03298, PCT Pub. Date Nov. 26, 1981

Continuation of Ser. No. 339,440, Jan. 8, 1982, abandoned. This PCT application May 11, 1981, Ser. No. 682,484

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018399

Int. Cl.⁴ B23K *11/00*

U.S. Cl. 219—91.21 **8 Claims**



1. A method for operating a welding electrode arrangement to weld a metal work piece covered by a meltable cover wherein the arrangement comprises a substantially U-shaped electrode with two legs linked at a bottom portion to form an electrode working area, and a counter-electrode, the method comprising the steps of:

applying a first electric potential difference across the ends of said legs of said substantially U-shaped electrode to induce a heating current flow from one end of one of said legs through said bottom portion and back to the other leg for heating up said bottom portion of said substantially U-shaped electrode to melt said meltable cover;

applying a second electric potential difference across both said ends of said legs jointly, and said counter-electrode to induce a welding current flow through both said legs in parallel, through said bottom portion, through said metal work piece, and through said counter-electrode.

4,543,463

METHOD AND APPARATUS FOR DYNAMIC BALANCING OF ROTATING BODIES

Giovan B. Scuricini, Rome, Italy, assignor to Comitato Nazionale per l'Energia Nucleare, Italy

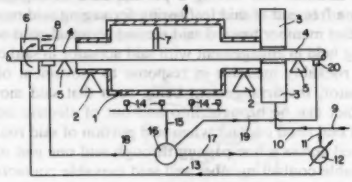
Filed Jul. 30, 1981, Ser. No. 288,326

Claims priority, application Italy, Aug. 8, 1981, 49453 A/80

Int. Cl.⁴ F16F *15/22;* **B23K** *26/00*

U.S. Cl. 219—121 LH **15 Claims**

6. Apparatus for dynamically balancing a rotating hollow body, in which sensing means coincidentally detect the vibrations of said rotating body at at least one zone thereof, so as to produce vibration signals which are processed in order to obtain driving signals, the improvement comprising: means for placing in synchronous rotation shaft means with said hollow rotating body; means for varying the mass of said rotating body, rotating together with said shaft means; phase variation means for controlling the phase of rotation of said mass varying means in synchronization with the phase of rotation of said rotating body; means for actuating in accordance with said driving signals said phase varying means and said mass varying means; and translation means for displacing said shaft and said mass varying means along the longitudinal axis of said hollow



body to permit said mass varying means to act on various planes of said body along the longitudinal axis thereof.

4,543,464

APPARATUS FOR SCRIBING SEMICONDUCTOR WAFER WITH LASER BEAM

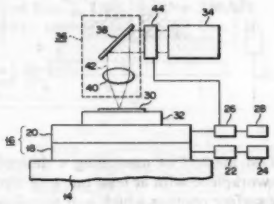
Bunzi Takeuchi, Sagamihara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 15, 1983, Ser. No. 514,330

Claims priority, application Japan, Jul. 19, 1982, 57-125356

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121 LH **8 Claims**



1. An apparatus for scribing a semiconductor wafer with a laser beam, comprising:

an XY table for placing a semiconductor wafer thereon;

a motor for driving the XY table in X and Y directions;

a laser beam oscillator disposed above the XY table;

an optical system for targeting the laser beam from the laser beam oscillator on the semiconductor wafer which is placed on the XY table; and

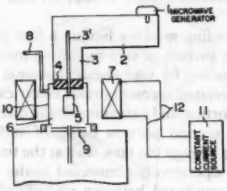
light interrupting means operated in accordance with the direction of movement of the XY table for passing the laser beam from the laser beam oscillator only when the XY table is moved in a predetermined direction in synchronism with the motor and for interrupting the laser beam from the oscillator when the XY table is moved in other directions, said light interrupting means including a light interrupting switch positioned in the path of the laser beam.

4,543,465

MICROWAVE PLASMA SOURCE HAVING IMPROVED SWITCHING OPERATION FROM PLASMA IGNITION PHASE TO NORMAL ION EXTRACTION PHASE

Noriyuki Sakudo, Ohme; Katsunobu Abe, Katsuta; Katsumi Tokiguchi, Machida; Hidemi Koike, Tokorozawa, and Osami Okada, Chofu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 26, 1983, Ser. No. 517,404
Claims priority, application Japan, Aug. 30, 1982, 57-149226
Int. Cl.[4] B23K *9/00*; H01J *27/00*
U.S. Cl. 219—121 PD 11 Claims



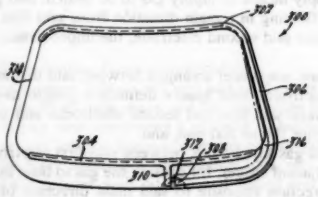
1. A microwave plasma source comprising a discharge space, means for feeding a discharge gas into said discharge space, a microwave generator, means for guiding microwaves into said discharge space, magnetic field generating means for generating a magnetic field in said discharge space having the microwaves and discharge gas supplied thereto, said magnetic field generating means generating a magnetic field of a first intensity for enabling ion extraction from plasma in said discharge space and for generating a magnetic field of a second intensity for enabling ignition of plasma in said discharge space, a current source for supplying a current to a coil of said magnetic field generating means, control circuit means for controlling the current supplied to the coil, said control circuit means including a potentiometer set at a predetermined position for generating the first magnetic field intensity for an ion extraction phase, and a change-over switch for changing the magnetic field intensity generated by said magnetic field generation means between the first magnetic field intensity for an ion extraction phase and the second magnetic field intensity for a plasma ignition phase while said potentiometer remains set at said predetermined position.

4,543,466

BUS BAR ARRANGEMENT FOR UNIFORMLY HEATING A TRAPEZOIDALLY-SHAPED ELECTRICALLY HEATED WINDSHIELD

Kevin J. Ramus, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 2, 1984, Ser. No. 627,266
Int. Cl.[4] H05B *3/26*; E06B *7/12*; B60J *1/20*
U.S. Cl. 219—203 2 Claims



1. In an electrically heated windshield construction in which said windshield (a) is of generally trapezoidal shape, (b) has both an upper generally horizontally extending bus bar of uniform conductivity throughout its length and a lower generally horizontally extending bus bar of uniform conductivity throughout its length, and (c) a continuous and uniformly thick trapezoidal-shaped electrically conductive coating on said windshield which electrically interconnects said upper bus bar and said lower bus bar, an improved bus bar configuration in which:

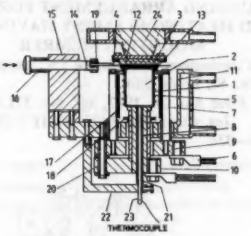
said bus bars are formed in a manner such that (1) the line of contact of said upper generally horizontally extending bus bar with said electrically conductive coating has a length which extends generally along an entire effective length of an upper edge of said electrically conductive coating on said windshield, and (2) the line of contact of said lower generally horizontally extending bus bar being symetrically located on the lower edge of said electrically conductive coating and having a length equal to the sum of said length of said line of contact of said upper bus bar plus generally about one-half of the difference between the entire effective length of the lower edge of said electrically conductive coating on said windshield minus said length of said line of contact of said upper bus bar.

4,543,467

EFFUSION TYPE EVAPORATOR CELL FOR VACUUM EVAPORATORS

Ignaz Eisele, Icking; Bernhard Bullemer, and Andreas Beck, both of Munich, all of Fed. Rep. of Germany, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Oct. 25, 1983, Ser. No. 545,235
Claims priority, application Switzerland, Oct. 26, 1982, 6224/82
Int. Cl.[4] F27B *14/12*
U.S. Cl. 219—271 7 Claims



1. An effusion evaporator cell for a vacuum evaporator, comprising:

a housing;

a crucible defining a space for containing material to be evaporated connected to said housing;

crucible heating means associated with said crucible for heating said crucible to evaporate material in said crucible to form a vapor;

a wall portion connected to said crucible for closing said space, said wall portion having at least one aperture therein for allowing vapor to effuse therethrough and out of said crucible;

a heatable slide slidably mounted to said housing and across said wall portion for varying an opening of said at least one aperture of said wall portion for adjusting the amount of vapor effused out of said crucible;

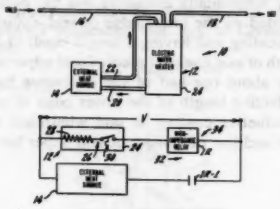
slide heating means associated with said slide for heating said slide;

said slide being made of one of boron nitride and graphite, and said wall portion being made of one of boron nitride and graphite.

4,543,468
CONTROL SYSTEM FOR WATER HEATER WITH EXTERNAL HEAT SOURCE

Jacob E. Shaffer, Jr.; John C. Reier, and Frederick C. Tome, Jr., all of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 16, 1982, Ser. No. 450,499
Int. Cl.[4] H05B *1/02*; F24J *3/04*; F25B *29/00*; F24H *1/20*
U.S. Cl. 219—279 20 Claims

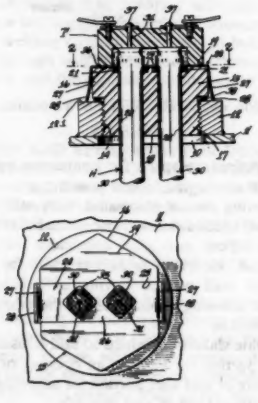


1. In a control system for controlling the heating operation of a water heater operatively associated with an external heat source, said water heater including a water storage tank having an internal tank heating unit and a tank thermostat; the improvement wherein said control system comprises first means for both maintaining said tank heating unit effectively turned off and turning said external heat source on in response to an indication from said tank thermostat that there is a demand for hot water in said tank, said first means turning said external heat source off in response to an indication from said tank thermostat that the demand for hot water in said tank has been satisfied.

4,543,469
GROUNDING ARRANGEMENT FOR METAL SHEATHED HEATING ELEMENT HAVING A PLASTIC MOUNTING MEMBER

Donald M. Cunningham, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 26, 1982, Ser. No. 371,668
Int. Cl.[4] H05B *3/82*; F24H *1/20*
U.S. Cl. 219—336 20 Claims



1. In an electric heating element adapted to be mounted on the metal wall of a fluid container with an active heating portion extending through an opening in the wall for heating the contents of the container, said heating element comprising a metal sheath, an electrical resistance heating conductor longitudinally within said sheath, a thermally-conductive electrical insulation material supporting said resistance conductor within said sheath, and an electrical terminal conductor connected to an end of said resistance conductor at a terminal portion of said sheath and extending outwardly of an end of said sheath, the improvement comprising:

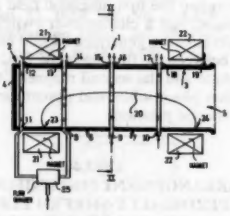
a plastic mounting member fixed to said sheath terminal portion, said mounting member being adapted for connection to the wall of the container to support said heating element in operative position with said active heating portion extending into the container, said mounting member being formed of a rigid plastic material whereby it needs no reenforcement to support said heating element, and,

a metal grounding member having a first portion overlying an exterior surface of said mounting member and electrically connected to said sheath terminal portion, and an angularly-related second portion electrically connected to said first portion and extending in the direction of the tank wall, said second portion being of sufficient length to electrically engage the tank wall at the time said mounting member is operatively connected to the wall, to form an electrical connected between said sheath and the metal tank wall.

4,543,470
MEANS FOR ELECTRICALLY HEATING GASES

Sven Santén, Hofors; Palne Mogensen, Djursholm; Mats Kaij, and Jan Thörnblom, both of Hofors, all of Sweden, assignors to SKF Steel Engineering AB, Sweden

Filed Dec. 8, 1983, Ser. No. 559,353
Claims priority, application Sweden, Mar. 15, 1983, 8301394; Jun. 29, 1983, 8303706
Int. Cl.[4] H05B *7/18*
U.S. Cl. 219—383 20 Claims



1. In gas heating means for electrically heating gases having

(a) a plasma generator comprising first and second cylindrical electrodes, said first cylindrical electrode having an open end and a closed end and said second cylindrical electrode having two open ends; and

(b) supply means to supply gas to be heated, said gas generally flowing in a main direction from said first electrode toward said second electrode, the improvement comprising:

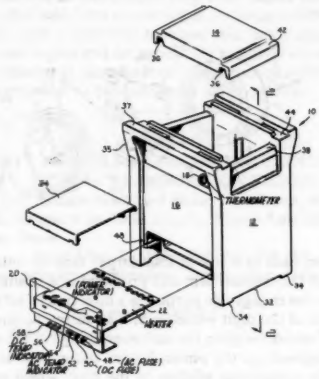
at least one spacer arranged between said first and second electrodes, said spacer defining a length disposed between said first and second electrodes and said length being 100 to 500 mm; and

a first gas supply gap, between said first electrode and an adjacent spacer, for causing the gas to flow initially in a direction opposite to said main direction of gas flow through said gas heating means, whereby an arc may emerge from said first electrode at an upstream arc root, follow an arc passage through said spacer, and contact said second electrode at a downstream root, and whereby said upstream root of the arc is moved against the main direction of gas flow, toward the closed electrode end.

4,543,471
CONTROLLED TEMPERATURE FOOD CARRIER

John W. Anderson, Framingham, Mass., assignor to Temp Tech, Inc., Springfield, Mass.

Filed May 25, 1983, Ser. No. 497,753
Int. Cl.[4] A21B *1/52;* F27D *11/00;* H05B *3/06*
U.S. Cl. 219—387 6 Claims



1. A controlled temperature food carrier for carrying a plurality of meals comprising a walled housing having a bottom and an open top, a removable lid for opening and closing said top, said housing having a front wall, a portion of said front wall of said housing having an opening therein adjacent the bottom of said housing, said opening being sized to preclude simultaneous removal of all of said meals thereby limiting heat loss from within said housing, temperature control means removably disposed in said housing through said opening in said front wall, and a movable door disposed on said front wall for opening and closing said opening therein for the removal of meals from said housing.

4,543,472
PLANE LIGHT SOURCE UNIT AND RADIANT HEATING FURNACE INCLUDING SAME

Tetsuji Arai, and Tatsushi Igarashi, both of Hyogo, Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1982, Ser. No. 438,790
Int. Cl.[4] H05B *1/00;* F27D *11/00*
U.S. Cl. 219—411 3 Claims

1. A radiant heating furnace comprising:

at least one plane light source unit arranged along a boundary of an irradiation space and having means for evenly distributing heat comprising a plurality of halogen lamps, each of said halogen lamps comprising an elongated sealed tubular body defining a longitudinal axis, said body including a tubular wall portion and sealed end portions, and a filament formed of alternating non-luminous portions and luminous portions in the tubular body along the longitudinal axis;

a mirror positioned in proximity to said halogen lamps;

side mirrors spaced from one another and arranged along the irradiation space generally orthogonal to said plane light source unit;

a cooling system adapted to cool the plane light source unit; and

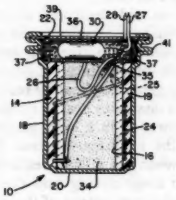
lamp supports mounted on said side mirrors, wherein said halogen lamps are disposed close to each other with the longitudinal axes thereof parallel and lying in a common plane, each of said lamps being supported at its tubular wall portion adjacent to its sealed end portions by said lamp supports, said sealed end portions being exposed and uncovered; and

said cooling system includes a water cooling system comprising water channels extending through said side mirrors, said water channels being in communication with a cooling water supply system.

4,543,473
IMMERSION HEATER AND THERMOSTAT UNIT

Robert M. Wells, 4371 Ira Rd., Akron, Ohio 44313, and Alton R. Wells, 4573 W. Trade Winds, Lauderdale by the Sea, Fla. 33308

Continuation-in-part of Ser. No. 412,529, Aug. 30, 1982, abandoned. This application Feb. 23, 1984, Ser. No. 582,930
Int. Cl.[4] H05B *3/06*
U.S. Cl. 219—523 6 Claims



1. An electric heater for use with a small container for heating the liquid contents thereof and comprising:

an electrically non-conductive heater core having an open center,

a heat conductive metal stainless steel heater can having one closed and one open end, said heater core being operatively positioned in said heater can to extend longitudinally, thereof, said can being adapted to be positioned within a container to heat the contents thereof,

a heater coil carried by said heater core on only a portion of said heater core immediately adjacent said closed end,

a thermostat extending transversely of said heater core immediately adjacent the open end of said heater can and connecting to said heater coil,

foam glass bead insulation means within said heater can and core and filling said core, and

a paper insulation sleeve totally encompassing said thermostat and extending longitudinally beyond the same at each end whereby the thermostat is insulated from heat in said heater core to measure more rapidly and accurately the temperature of a liquid in which the heater can is immersed, said heater core having a pair of downwardly extending diametrically opposed slots formed in its upper end, said insulation sleeve encompassed thermostat being positioned in said slots and extending across the open center of said heater core.

4,543,474

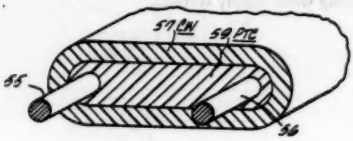
LAYERED SELF-REGULATING HEATING ARTICLE

David A. Horsma, Palo Alto; Bernard J. Lyons, Atherton, and Robert Smith-Johannsen, Portola Valley, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 78,386, Sep. 24, 1979, Pat. No. 4,330,703, which is a continuation of Ser. No. 601,638, Aug. 4, 1975, Pat. No. 4,177,376, which is a continuation-in-part of Ser. No. 510,036, Sep. 27, 1974, abandoned. This application Jan. 6, 1982, Ser. No. 337,436

Int. Cl.[4] H05B *3/10*

U.S. Cl. 219—553 47 Claims



1. A self-regulating electrical device which comprises

(a) at least one PTC layer composed of a PTC material which exhibit PTC behavior with an anomaly temperature T_s;

(b) at least one CW layer composed of a CW material which exhibits substantially CW behavior at T_s and below, at least a part of a surface of the CW layer being in direct electrical and physical contact with at least a part of a surface of the PTC layer; and

(c) at least two electrodes which can be connected to a source of electrical power to cause electrical current to flow through the device;

said device, when said electrodes are connected at ambient temperature to a suitable source of electrical power, undergoing conversion from an ambient temperature state to a high temperature equilibrium state in which (a) the device generates heat by resistive heating at the same rate as it dissipates heat to its surroundings and (b) the PTC element is in a high temperature high resistance state; the electrical current flowing across the interface between the PTC layer and the CW layer at least at some stage during said conversion and more than 50% of the heat output of the device being generated in said at least one CW layer when the device is connected to a source of electrical power at ambient temperature;

subject to the proviso that if there are electrodes of opposite polarity which are in direct physical and electrical contact with the same PTC layer, the electrodes are embedded in and surrounded by the PTC layer, and the CW layer substantially surrounds the PTC layer.

4,543,475

ANTIREVERSE MEANS FOR AN ODOMETER

Seizou Tanaka, Nagaoka, Japan, assignor to Nippon Seiki Kabushiki Kaisha, Niigata, Japan

Filed Nov. 9, 1981, Ser. No. 319,726

Claims priority, application Japan, Nov. 8, 1980, 55-159983[U]

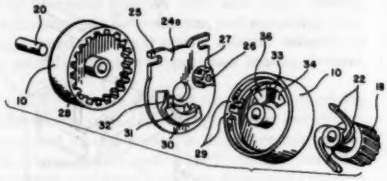
Int. Cl.[4] G01C *22/00*

U.S. Cl. 235—96 3 Claims

1. An antireverse rotation means for use in an odometer of the type including a plurality of digit wheels for transmitting the rotary drive from the least significant digit wheel to the most significant digit wheel sequence by way of pinion gears, a one-way clutch means provided between a drive gear and the least significant digit wheel in order to rotate said least significant digit wheel through engagement with the drive gear during the positive rotation of the drive gear but to let said digit wheel stay in a stationary state during the reverse rotation of the drive gear, pinion holders each fixed between the digit wheels and supports said pinion gear in a manner that the pinion gear can be rotated through intermeshing with the teeth provided on the digit wheel, said antireverse rotation means comprising:

a resilient arm provied thereon and protruding from the pinion gear support;

an engageable portion provided on the side face of the least significant digit wheel and corresponding to said resilient arm; and



depression each in a size at least larger than an antireverse pawl of the resilient arm and provided at a position adjacent to the engageable portion in a direction of subtractive rotation of the digit wheel such that during positive rotation of said drive gear, the antireverse pawl of the resilient arm disposed on the pinion holder slides over and rides past the engageable portion of the digit wheel and falls into the depression but again slides and comes out of the depression, and during reverse rotation of the drive gear, the engageable portion is engaged with the free end of the resilient arm and thus blocks rotation.

4,543,476

FOCUS DETECTOR

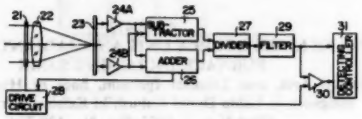
Yoshiaki Horikawa, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Japan

Filed Jan. 24, 1983, Ser. No. 460,410

Claims priority, application Japan, May 10, 1982, 57-77719

Int. Cl.[4] G01J *1/20*

U.S. Cl. 250—201 10 Claims



1. A focus detector, comprising

an imaging lens;

light path selecting means for permitting light from an object to alternately pass through different first and second regions of said imaging lens;

photoelectric transducer means having a light receiving monolayer disposed in a predetermined imaging plane of said imaging lens for receiving the light passing through said first and second regions;

circuit means for forming a signal from an output of said transducer means representing the center of gravity of a light intensity distribution impinging upon said light receiving monolayer, said center of gravity signal having first and second polarities, associated respectively, with the condition when said light is focused in front and in the rear of said light receiving monolayer;

light path indication means for producing a light path signal having a first predetermined level when said light passes through said first region and a second predetermined level when said light passes through said second region;

discriminator means responsive to said light path signal and to said signal representing the center of gravity for pro-

ducing a focusing sense signal having a first level to indicate a front focus condition and a second predetermined level to indicate a rear focus condition, said focusing sense signal being produced by correlating said polarity of said center of gravity signal with said first and second predetermined levels of said light path signal and

focusing correction means responsive to said focusing sense signal and to said center of gravity signal for detecting whether said front or rear focus conditions exists when the light path is switched between said first region and said second region and for producing a control signal based on the change in magnitude of said signal for controlling said imaging lens to produce an in focus condition.

4,543,477

SAFETY DEVICE FOR DETECTING TROUBLE IN OPTICAL TRANSMISSION FIBERS

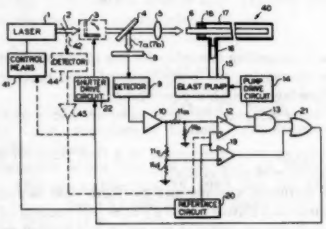
Yuzuru Doi; Masato Hara, and Hideo Yoshihama, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,311

Claims priority, application Japan, Apr. 19, 1982, 57-56737[U]

Int. Cl.⁴ G02B *5/14*

U.S. Cl. 250—227 **10 Claims**



1. In a safety device for detecting trouble in an optical transmission fiber of a medical laser apparatus, the laser apparatus comprising a hollow tube having an open end; a transmission fiber having an incident end surface and an exit end surface, said fiber extending into the hollow tube with the exit end surface being adjacent the open end; a laser light source for emitting a beam of laser light; optical means for focusing the beam of laser light onto the incident cnd surface of the transmission fiber; control means for interrupting the beam of laser light; and blast means for blowing air in the space between the tube and the fiber, the improvements comprising a safety device having detecting means capable of detecting both the laser light signal reflected from the exit end surface of the fiber and a secondary light signal and actuating means to operate the control means in response to detection of either the secondary light signal or the laser light signal and the signal from an operating blast means.

4,543,478

DETECTOR PULSE FORMING SYSTEM FOR NUCLEAR WELL LOGGING TOOLS

Allen Nunley, and John G. Kampfer, both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 9, 1982, Ser. No. 448,089

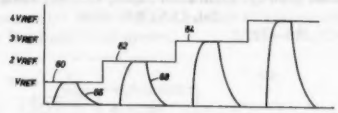
Int. Cl.⁴ G01V *5/04;* G01D *18/00*

U.S. Cl. 250—261 **4 Claims**

1. A pulse simulator for generating output pulses of controlled amplitude and frequency for use in a downhole nuclear well logging instrument for calibrating a pulse height analyzer for measuring the energy of radiation from materials in the vicinity of a well borehole, comprising:

means for generating a plurality of voltage pulses of approximately constant amplitude at a repetition rate controlled by a clock oscillator;

digital means responsive to said clock oscillator for generating a digital control signal for determining the amplitude of said output pulses of said simulator; and



means responsive to said approximately constant amplitude pulses and said digital control signal for generating therefrom a plurality of analog voltage pulses having monotonically increasing or decreasing amplitudes as a function of time.

4,543,479

RADIATION IMAGE RECORDING AND READ-OUT SYSTEM

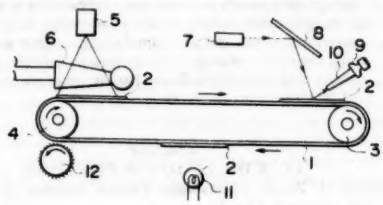
Hisatoyo Kato, Kaisei, Japan, assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Oct. 18, 1982, Ser. No. 434,883

Claims priority, application Japan, Oct. 16, 1981, 56-165118; Oct. 16, 1981, 56-165122; Oct. 16, 1981, 56-165123; May 19, 1982, 57-84436

Int. Cl.⁴ G01T *1/105*

U.S. Cl. 250—327.2 **10 Claims**



1. A radiation image recording and read-out system comprising:

(a) a supporting material,

(b) at least one recording material fixed on said supporting material and comprised of a stimulable phosphor layer capable of storing a radiation image,

(c) an image recording section for exposing said recording material to a radiation passing through an object to have a radiation transmission image of the object stored on said recording material,

(d) an image read-out section provided with a stimulating ray source for emitting a stimulating ray for scanning said recording material carrying said radiation image stored thereon, and a photoelectric read-out means for obtaining an electric image signal by reading out light emitted from said recording material scanned and stimulated with the stimulating ray,

(e) a means for circulating said recording material on said supporting material with respect to said image read-out section for enabling reuse of said recording material by repeatedly moving said supporting material and said image read-out section with respect to each other, and

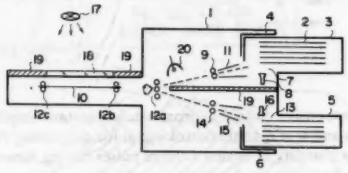
(f) an erasing means for eliminating the radiation energy remaining on said recording material prior to image recording on said recording material after the radiation image is read out therefrom at said image read-out section.

4,543,480

RADIATION IMAGE RECORDING SYSTEM

Hisatoyo Kato, Minami-ashigara, Japan, assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Oct. 12, 1982, Ser. No. 433,718
Claims priority, application Japan, Oct. 16, 1981, 56-165117
Int. Cl.⁴ G03C *5/16*
U.S. Cl. 250—327.2 **14 Claims**



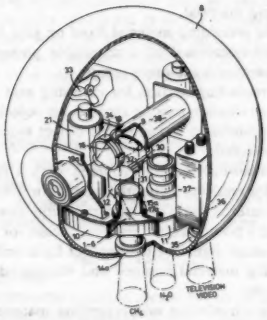
1. A radiation image recording system comprising:
(a) a container means for containing stimulable phosphor sheets or a continuous stimulable phosphor sheet used for radiation image recording and reproduction;
(b) a stimulable phosphor sheet supplying means for supplying each said stimulable phosphor sheet or predetermined lengths of said continuous phosphor sheet from said container means to a recording position;
(c) a stimulable phosphor sheet holding means for holding said stimulable phosphor sheet in said recording position;
(d) a sheet delivery means for ejecting said stimulable phosphor sheet from said recording position after a radiation image is recorded on said stimulable phosphor sheet and for delivering it to a sheet receiving section or a radiation image information read out and reproducing system;
(e) an irradiation means which is provided between said container means and said stimulable phosphor sheet holding means for erasing noise in said stimulable phosphor sheet, said irradiation means having an exposure amount of 500,000 lx·sec. or more.

4,543,481

LEAK DETECTION IN PIPELINES

Harold H. Zwick, Mississauga, Canada, assignor to Moniteq Ltd., Concord, Canada

Filed Dec. 8, 1983, Ser. No. 559,945
Int. Cl.⁴ G01J *1/00*
U.S. Cl. 250—339 **18 Claims**



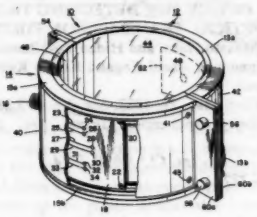
4. Apparatus for detecting leaks in a gas pipeline, comprising a multiple channel radiometer mountable in or on an aircraft, means for focusing radiation on the radiometer from a defined direction beneath the aircraft, means for comparing two outputs of the channels of the radiometer to provide signals representative of changes in the ratio of said outputs, and means to record said signals, one of said two channels being sensitive to radiation components characteristic of a first gas diffused at a low concentration through the atmosphere and also present in the pipeline, and the second channel being sensitive to radiation components characteristic of a second gas diffused at a low concentration through the atmosphere but not present in the pipeline.

4,543,482

TRANSDUCER MOUNTING ASSEMBLY

Irving R. Brenholdt, Stratford, Conn., assignor to St. Regis Paper Company, West Nyack, N.Y.

Filed Feb. 1, 1983, Ser. No. 463,035
Int. Cl.⁴ G01J *1/00*
U.S. Cl. 250—343 **19 Claims**



1. transducer mounting assembly for use in conjunction with apparatus for measuring the percentage of solid particles in a suspension flowing through a pipe comprising:
a hinged collar adapted to be secured around a section of pipe;
a radiant energy source mounted at a first position on the circumference of said collar;
means for diffusing radiant energy from said source and introducing said diffused energy into said section of pipe;
a first radiant energy detector mounted at a second position on the circumference of said collar for sensing diffused energy in said pipe which is predominantly forward-scattered when a suspension is flowing therethrough;
a second radiant energy detector mounted at a third position on the circumference of said collar opposite said first detector and adjacent said first position for sensing diffused energy in said pipe which is predominantly back-scattered when a suspension is flowing therethrough; and
connector means mounted to said collar for connecting said radiant energy source and first and second detectors to a measuring apparatus.

4,543,483

RADIATION MEASURING INSTRUMENT

Volker Genrich, Heerstrasse 149, D-6000 Frankfurt am Main 90, Fed. Rep. of Germany

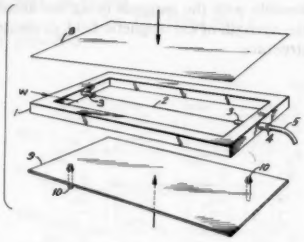
PCT No. PCT/EP81/00203, § 371 Date Aug. 9, 1982, § 102(e) Date Aug. 9, 1982, PCT Pub. No. WO82/02456, PCT Pub. Date Jul. 22, 1982
PCT Filed Dec. 22, 1981, Ser. No. 413,368
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1981, 3100447
Int. Cl.⁴ H01J *47/06*
U.S. Cl. 250—374 **14 Claims**

1. A pocket-size radiation measuring instrument for detecting ionizing beta, gamma, and neutron radiaion, which as its detector has
a large-surface window-type counter tube suitable for measuring contamination with a completely and permanently sealed gas chamber, as well as
a counter gas in said gas chamber,
an anode and a cathode,
a high voltage (multiple kilovolt) generator (HSP) connected to said anode and cathode,

wherein, in accordance with the invention,

the counter tube structure substantially comprises no more than three simple plastic parts (**1**, **8**, **9**), namely

a substantially planar window (**8**), a substantially planar base (**9**), and a frame-like hollow middle part (**1**), sandwiched between and sealed at its periphery to said window and base (**9**),



at least one of said window and said base having a metal coating thereon which serves as the cathode for said counter tube, and

a highly elastic counter wire (**2**) supported under tension within said hollow middle part (**1**) and serving as the anode for said counter tube.

4,543,484

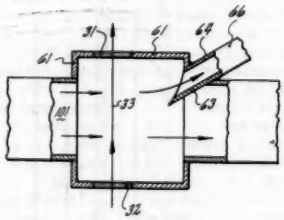
LASER PARTICLE REMOVAL

Russell G. Meyerand, Jr., and David C. Smith, both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 208,470, Nov. 19, 1980, abandoned. This application Feb. 15, 1983, Ser. No. 466,443

Int. Cl.⁴ H01J *27/24;* **B03C** *3/38*

U.S. Cl. 250—423 P **5 Claims**



1. In a gas-turbine power plant, an apparatus for the removal of macroscopic particulate matter having an average diameter less than ten microns from a fluid stream passing between a combustion unit and a gas turbine comprising:

means for directing said fluid stream through an interaction region;

a ring laser means for generating and directing a substantially parallel optical beam through said interaction region, with an intensity of less than 10,000 watts per square centimeter, whereby at least a portion of said macroscopic particulate matter is partially vaporized and deflected transversely out of said interaction region; and

means for removing said deflected portion of said particulate matter from said fluid flow.

3. In a gas-turbine power plant, an apparatus for the removal of macroscopic particulate matter having an average diameter of less than ten microns from a gaseous stream passing between a combustion unit and a gas turbine comprising:

means for directing said gaseous stream through an interaction region;

optical means for imposing an electric charge on a portion of said macroscopic particulate matter by generating and directing a substantially parallel beam of optical radiation of predetermined intensity through said gaseous stream in said interaction region, whereby said radiation interacts with and alters the charge of said portion of said particulate matter; and

electric means for removing said portion of said particulate matter from said fluid stream.

4,543,485

SCINTILLATOR FOR RADIATION DETECTION AND PROCESS FOR PRODUCING THE SAME

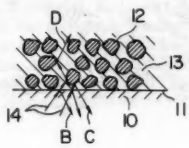
Mitsuru Ishii, Higashiyamato; Seikichi Akiyama, Mito, and Hiroshi Ishibashi, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 19, 1982, Ser. No. 443,034

Claims priority, application Japan, Nov. 24, 1981, 56-188824; Nov. 24, 1981, 56-188825

Int. Cl.⁴ G01J *1/58;* **G01N** *21/64*

U.S. Cl. 250—487.1 **13 Claims**



1. A scintillator for radiation detection, including a solid scintillator material substrate adapted to have one surface thereof in contact with a light receiver, obtained by coating, by a screen printing method providing a uniform thickness of 50 to 150 μm, a light reflective material on the whole surface of the solid scintillator material substrate other than the surface to be in contact with the light receiver, the light reflective material being coated on the surface of the solid scintillator material substrate as part of a mixture of said light reflective material, an organic binder and an organic solvent, and drying the light reflective material, followed by spraying and drying a synthetic resin to form a synthetic resin film on the light reflective material layer.

4,543,486

METHOD AND APPARATUS FOR USING A PHOTOACOUSTIC EFFECT FOR CONTROLLING VARIOUS PROCESSES UTILIZING LASER AND ION BEAMS, AND THE LIKE

Douglas N. Rose, Macomb, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 496,366, May 20, 1983, Pat. No. 4,476,150. This application Jun. 8, 1983, Ser. No. 502,419

Int. Cl.⁴ H01J *37/304;* **B23K** *15/00, 26/00*

U.S. Cl. 250—492.1 **26 Claims**

1. A novel method for controlling various processes by utilizing a photoacoustic effect principle, whether or not the various processes are with regard to a solid or non-solid fluid medium, said processes using and requiring control of a primary excitation beam of the type including laser beams, microwave beams, x-rays and other electromagnetic wave beams, as well as ion, electron, particle and molecular beams, and which processes include the use of appropriate beam-generating means and beam-generating power control means in conjunction therewith, said novel method comprising the steps of:

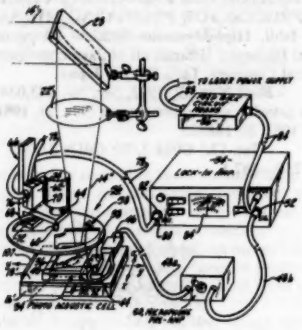
(a) generating and modulating in a pulsing manner a selected type of primary excitation beam;

(b) directing said beam at a workpiece or work area to be treated thereby, so as to create a temperature variation thereat, and so as to establish a photoacoustic effect;

(c) continuously monitoring the beam-impacted work area by one of several different photoacoustic effect detection techniques which includes means for detecting the characteristic temperature variation in said area, which variation can manifest itself as pressure, index of refraction, thermoelastic, or infrared (IR) radiation changes, considered singly and in various combinations;

(d) said monitoring step resulting in generating an electrical signal by appropriate transducer means, with the signal to be used by ancillary signal processing means;

(e) said monitoring further using the selected type photoacoustic effect detecting means for detecting any such work area temperature variation outside of a predetermined acceptable - unacceptable temperature range which is indicative that the given process with which this control procedure or process is being used is in need of correction, and



(f) using said electrical signal as generated in conjunction with said monitoring means of sub-paragraphs (c) (d) (e), together with ancillary signal-processing control circuit means for effectively maintaining and modifying as needed the beam-generating power control to assure proper overall processing.

4,543,487

PROCEDURE AND MEANS FOR CREATING AN ELECTRON CURTAIN WITH ADJUSTABLE INTENSITY DISTRIBUTION

Pertti Puumalainen, Kuopio; Rauno Rantanen, Imatra, and Pertti Sikanen, Kuopio, all of Finland, assignors to Enso-Gutzeit Oy, Helsinki, Finland

Filed May 3, 1984, Ser. No. 606,719

Claims priority, application Finland, May 3, 1983, 831524

Int. Cl.[4] H01J *37/04, 37/301*

U.S. Cl. 250—493.1 **7 Claims**

1. Procedure for creating an electron curtain with adjustable intensity distribution, wherein by means of an elongated filament placed in a chamber are produced free electrons in a space surrounding the filament, the electrons are accelerated in said space by means of an electrode structure confining it, and the electron curtain constituted by the accelerated electrons is directed out from the chamber through a window permeable to electrons in its wall, and wherein regulation of the intensity distribution of the electron curtain takes place by use of an elongated body of magnetically soft material and of a row of magnets constituted by magnets placed side by side, one of the two being disposed substantially parallelling the filament behind the filament as seen from the direction of the window of the chamber and the other being disposed outside the window of the chamber before the electron curtain, the basis for the regulation achievable with the magnets being the absorption, dependent on the strength of the magnetic field, of electrons in the electrode structure.

4,543,488

TRANSPORTATION AND STORAGE FOR NUCLEAR FUEL WASTES

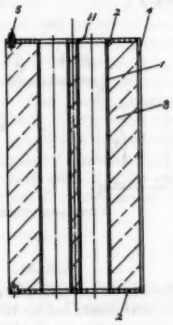
Hans Diem, Alzenau, Fed. Rep. of Germany, assignor to Transnuklear GmbH, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 538,845, Oct. 5, 1983, abandoned, which is a continuation of Ser. No. 263,557, May 14, 1981, abandoned. This application Oct. 9, 1984, Ser. No. 659,027

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1978, 7833030[U]

Int. Cl.[4] G21F *5/00*

U.S. Cl. 250—507.1 **12 Claims**



1. An exchangeable basket element for a container for transporting and/or storing spent nuclear fuel elements comprising:

a plurality of steel tubes of substantially uniform cross-sectional dimensions throughout their length defining compartments shaped for the reception of spent nuclear fuel elements, said tubes being arranged in a spaced-apart and generally parallel relationship to one another;

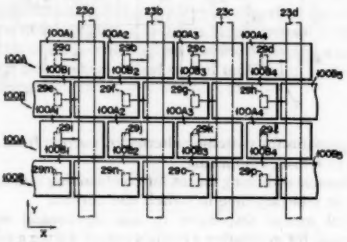
steel plate means provided at least at each end of said basket element for laterally connecting together said tubes so as to define, together with said steel tubes, an integral steel framework; and

a casting of a non-ferrous metallic meterial having high heat conductivity wherein said framework is embedded along its length while leaving at least one end of said tubes open so that fuel elements can be inserted into and withdrawn from said tubes.

4,543,489
SOLID STATE IMAGE SENSOR

Nozomu Harada; Yukio Endo; Okio Yoshida, and Yoshiyuki Matsunaga, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 379,874, May 19, 1982, abandoned. This application Feb. 28, 1985, Ser. No. 706,254
Claims priority, application Japan, May 25, 1981, 56-78978; Sep. 30, 1981, 56-153563
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 6 Claims

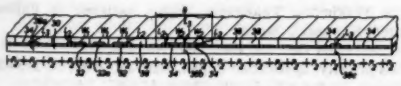


1. A solid state image sensor with a plurality of cells having picture element areas comprising:
a semiconductor substrate;
a photoelectric converting film formed on said semiconductor substrate for photoelectrically converting incoming light rays to signal charge;
signal charge storage areas formed in said substrate for storing said signal charge;
signal charge read out areas for reading out said signal charge from said storage area; and
a matrix of conductor electrodes each defining all the areas corresponding to said picture element areas, said picture element areas acting as effective areas for collecting said signal charge formed in said photoelectric converting film, said conductor electrodes making said photoelectric converting film electrically contact said signal charge storage areas and conducting signal charge to said storage areas; said conductor electrodes being arranged along at least two row lines with gaps between the electrodes in each row in the matrix of said conductor electrodes, the conductor electrodes in a first row line being each displaced by the same amount relative to the conductor electrodes in a second row line adjacent said first row line as viewed in the column direction, and the conductor electrodes in said first row line each having a zone overlapping the conductor electrodes in said second row line and completely overlapping the gaps between the electrodes in the second row as viewed in the column direction.

4,543,490
HIGH DENSITY DETECTOR ARRAY WITH REPLACEABLE SECTIONS

Nand K. Gupta, Libertyville, Ill., assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 15, 1983, Ser. No. 523,366
Int. Cl.[4] G01T *1/20*
U.S. Cl. 250—578 5 Claims

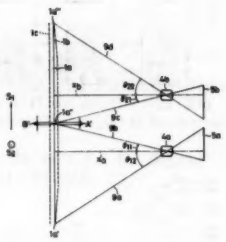


1. A high density X-ray detector array comprising:
a. a plurality of groups of first photocells, said first photocells mounted side-by-side on a substrate, said first photocells being of equal width W and being spaced from one another by a separation distance L to maximize the density of said first photocells, said distance L being insufficient to permit interruption of said substrate between said first photocells without damage to said first photocells; and
b. a pair of side-by-side second photocells with each of said second photocells having a width less than W, with said pair located between two of said groups of first photocells, with each of said second photocells separated from an adjacent first photocell by said distance L, the centers of said first photocells on opposite sides of said pair of second photocells being separated by a distance equal to three times the sum of L plus W, and with said second photocells separated from each other by a distance sufficiently greater than L to permit selective interruption of said substrate between said second photocells without damage to said second photocells.

4,543,491
ORIGINAL READING DEVICE

Masamichi Tateoka, Yokohama; Junichi Asano, Hoya; Mitsuru Kurata, Yokohama, and Yoshikazu Yokomizo, Kawagoe, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 450,435
Claims priority, application Japan, Dec. 25, 1981, 56-214697
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 4 Claims



1. An original reading device comprising:
an original supporting surface for supporting an original thereon;
means for illuminating the original;
first and second solid state image pick-up elements for scanning optical images received thereby in the major scanning direction to form electrical signals corresponding to said received optical images, said first and second solid state image pick-up elements being disposed in spaced relation in the major scanning direction;
means for scanning the original in the minor scanning direction;
a first lens for forming, of a first area and a second area of the original separated by a boundary and arranged in the major scanning direction, the optical image of said first area on said first solid state image pick-up element, an optical axis of said first lens being incident on said first solid state image pick-up element; and
a second lens for forming the optical image of said second area of the original on said second solid state image pick-up element, an optical axis of said second lens being incident on said second solid state image pick-up element;
said first lens being disposed at such a position that the angle of view θ_{11} of said first lens with respect to said boundary is smaller than the angle of view θ_{12} of said first lens with respect to the end of said first area opposite to said boundary; and
said second lens being disposed at such a position that the angle of view θ_{21} of said second lens with respect to said boundary

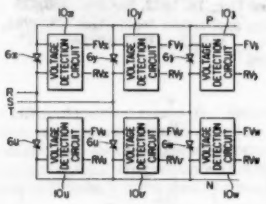
is smaller than the angle of view θ_{22} of said second lens with respect to the end of said second area opposite to said boundary.

4,543,492

METHOD AND SYSTEM FOR TERMINATING OPERATION OF AN HVDC INVERTOR

Haruhisa Inokuchi, Kunitachi, and Takami Sakai, Akishima, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 24, 1984, Ser. No. 583,362
Claims priority, application Japan, Feb. 28, 1983, 58-32156
Int. Cl.⁴ H02J *3/36*
U.S. Cl. 307—82 **10 Claims**



1. A method for terminating inverter operation of a converting device connected to a DC power transmission system and having a bridge connection of thyristor valves, comprising the steps of:

detecting absence of a current flowing through the converting device to provide an absence detection signal indicative of such absence, and

using said absence detection signal as one condition for effecting termination of the inverter operation,

wherein said step of detecting absence comprises detecting non-conduction of all the valves in at least one of the lower potential side and the higher potential side to find said absence of a current when said all the valves are found concurrently non-conducting, and

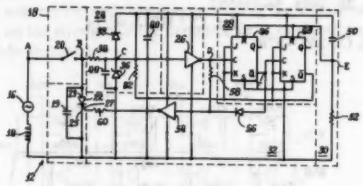
the detection of non-conduction of each valve comprises detecting a voltage across the valve to find the non-conduction when the voltage is found present.

4,543,493

ELECTRIC CONTROL CIRCUIT

William W. Stanley, Batavia, and Glenn E. Mikyska, Naperville, both of Ill., assignors to Cymatics, Inc., Naperville, Ill.

Filed Mar. 22, 1983, Ser. No. 477,764
Int. Cl.⁴ H01H *47/32*
U.S. Cl. 307—126 **10 Claims**



1. Apparatus for switching alternating current from a power source to a load, comprising:

mechanical switching means for commanding said apparatus at an arbitrary time to switch said current;

control means, responsive to said mechanical switching means, for generating a control output during a portion of a selected half-cycle of alternating current, said control output being delayed for at least one full cycle of alternating current after said command to switch current and not recurring until said switching means is released and then re-actuated;

said control means having counter means including a first J-K bistable device and a second J-K bistable device, the J-K inputs of said first and second bistable devices being connected to a first output of said second bistable device such that if said second bistable device is in one state then both bistable devices are enabled to change state upon the application of a clock signal to their respective clock inputs and such so that if said second bistable device is in another state then both bistable devices are locked in their respective states until said second bistable is reset, said first bistable device connected to the clock input of said second device by an output such that a transition from one state to another state by said first device will apply a clock signal to said second device; delay means for generating a reset signal applied to said first and second bistable devices for a predetermined period of time longer than one full cycle of alternating current and applied in response to said command to switch current; half wave rectifying means for rectifying a portion of said alternating current; wave shaping means for decreasing the rise and fall times of said rectifying means output; said first bistable device receiving a clock pulses from the output of said wave shaping means whereby said first bistable device generates a first output if said delay time has elapsed;

gate means, responsive to said first output and the output of said wave shaping means, for generating said control output during a portion of said selected half cycle of alternating current; and

second switching means, responsive to said control output, for switching current to said load during said selected half cycle.

4,543,494

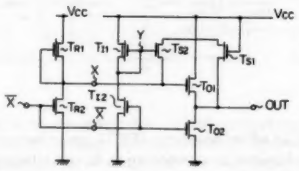
MOS TYPE OUTPUT DRIVER CIRCUIT HAVING A PROTECTIVE CIRCUIT

Yasuhiro Wakimoto, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 28, 1982, Ser. No. 454,167
Claims priority, application Japan, Dec. 29, 1981, 56-213408
Int. Cl.⁴ H03K *17/08, 17/687*
U.S. Cl. 307—200 B **3 Claims**

1. A MOS type output driver circuit operativey connected to receive first and second driver signals, comprising:

voltage supplying means for supplying a reference voltage;
ground potential supplying means;
output means having an output terminal, for producing an output level, comprising:
a first output transistor, having a drain operatively connected to said voltage supplying means, having a gate for receiving the first drive signal, and having a source;
a second output transistor, having a drain operatively connected to said source of said first output transistor, having a source operatively connected to said ground potential supplying means, and having a gate for receiving the second drive signal, the first and second drive signals being complementary to each other, the connection of said source of said first output transistor and said drain of said second output transistor forming a connection point which is said output terminal of said output means;



detector means, operatively connected to said connection point and said voltage supplying means, for detecting whether the output level of said output means is lower than the reference voltage when said first output transistor is conductive and, accordingly, outputting an output signal;
control means, operatively connected to said gate of said first output transistor and said detector means, for forcing the gate level of said first output transistor to be low in response to the output signal of said detector means so as to turn said first output transistor off; and
delay inhibit means, operatively connected to said detector means and said second output transistor, for inhibiting the output signal of said detector means for a predetermined period after said second output transistor changes from a conductive state to a non-conductive state.

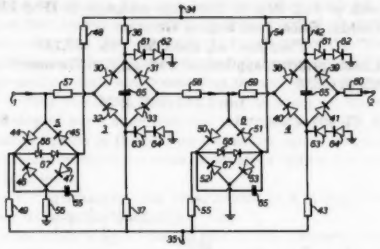
4,543,495

DIODE BRIDGE SWITCHING CIRCUIT WITH HIGH ATTENUATION

David P. Owen, Dunstable, England, assignor to Marconi Instruments Limited, Chelmsford, England

Filed May 14, 1982, Ser. No. 378,287
Claims priority, application United Kingdom, May 21, 1981, 8115666
Int. Cl.⁴ H03K *17/54, 5/08*
U.S. Cl. 307—257 **9 Claims**

1. A switching circuit including
a first switchable four-arm diode bridge connected between an input port and an output port and connected between a pair of bias terminals;
a second switchable four-arm diode bridge connected to said input port in shunt with said first bridge;
impedance matching means connected to said second bridge for presenting a predetermined matched value to said input port whilst said second bridge is conductive;
attenuation means for attenuating any high frequency signal breaking through said first diode bridge whilst in a non-conductive state, said means including a third switchable four-arm diode bridge connected in shunt with said first bridge between said output port and a reference potential level, said third bridge having a conductive state controlled in step with said second bridge to correspond therewith; and



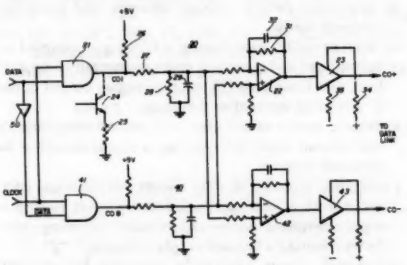
means connected to said bridges for controlling the conductive states of said first and second bridges so that said first bridge is conductive whilst said second bridge is non-conductive and vice versa.

4,543,496

DATA CONVERTER AND LINE DRIVER FOR A DIGITAL DATA COMMUNICATION SYSTEM

John E. Shepler, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 26, 1983, Ser. No. 545,483
Int. Cl.⁴ H03K *17/56*
U.S. Cl. 307—261 **9 Claims**



1. In a digital data communication system having sources of univerted and inverted monopolar digital data signals and a source of clock signals at a frequency twice the frequency of the data, a data converter comprising:
first and second two input NAND gates each having one input connected with said clock signal source, the first NAND gate having its other input connected with said uninverted data source and the second NAND gate having its other input connected with the inverted data source, the outputs of the NAND gates being complementary monopolar data signals at the clock frequency; and
first and second bipolar operational amplifiers having inverting and noninverting inputs crosscoupled to the outputs of said NAND gates, the outputs of the operational amplifiers being complementary bipolar data signals with intervals between data pulses.

4,543,497

ELECTRONIC MONITORING SYSTEM WITH SELECTIVE SIGNAL INVERSION

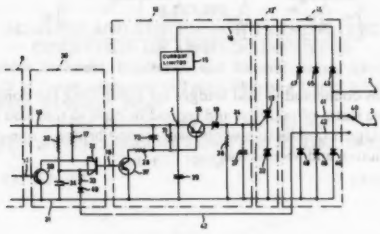
Robert Buck, Neukirch, and Jean L. Lamarche, Langenargen, both of Fed. Rep. of Germany, assignors to IFM Electronic GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 487,123

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214836

Int. Cl.[4] H03K *3/26*

U.S. Cl. 307—308 8 Claims



1. An electronic monitoring system comprising:

detector means sensitive to an ambient condition for generating on an output lead a binary signal assuming a predetermined value in response to a significant change in said ambient condition, said detector means being provided with a pair of power-input terminals;

a voltage-generating network provided with an incoming lead, an outgoing lead and a common lead, said outgoing and common leads being respectively connected to said power-input terminals;

an electronic switch inserted between said incoming and common leads;

an Exclusive-OR gate having a first input coupled to said output lead and a second input connected to an ancillary lead, said Exclusive-OR gate having an output connected to a control input of said switch;

resistance means connecting said second outgoing lead to said second input for applying a signal-inverting biasing potential thereto;

a utilization circuit including a source of electrical energy in series with a load, said utilization circuit having a first supply terminal connected to said incoming lead and further having a second supply terminal;

switchover means selectively operable for alternatively connecting said second supply terminal to said common lead in a first operating position and to said ancillary lead in a second operating position; and

asymmetrically conductive impedance means joining said common lead to said ancillary lead for enabling said source to energize said detector means by way of said load in both said operating positions while preventing any significant modification of said biasing potential on said second input in said first operating position but causing such modification in said second operating position whereby said Exclusive-OR gate transmits to said control input the logical complement of said binary signal in said first operating position and the uncomplemented binary signal in said second operating position, conduction of said switch under the control of said Exclusive-OR gate intensifying the current supplied by said source to said load in each of said operating positions.

4,543,498

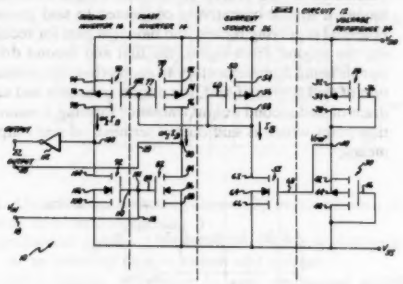
PROCESS INSENSITIVE CMOS WINDOW DETECTOR

James L. Gorecki, Chandler, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 16, 1982, Ser. No. 418,516

Int. Cl.[4] H03K *17/153;* G01R *19/165, 29/027*

U.S. Cl. 307—360 17 Claims



1. A field effect transistor (FET) integrated circuit voltage window detector for comparing an input voltage with first and second voltage levels representing a desired voltage window, the circuit comprising:

input means for receiving the input voltage;

first and second supply means adapted to receive first and second supply voltage levels, respectively;

bias circuit means for establishing bias current flow between the first and second supply means;

first current mirror FET means having a channel, a gate, a source, and a drain, the first current mirror FET means being connected to the bias circuit means so that a first current flow through the source-drain current path of the first current mirror FET means is established as a function of the bias current flow;

first current control FET means having a channel, a gate, a drain, and a source, the source and drain of the first current control FET means being connected in a first series current path with the source and drain of the first current mirror FET means between the first and second supply means, and the gate of the first current control FET means being connected to the input means to receive the input voltage, so that when the input voltage attains the first voltage level current flow through the source-drain current path of the first current control FET means changes;

second current mirror FET means having a channel, a gate, a source, and a drain, the second current mirror FET means being connected to the bias circuit means so that a second current flow through the source-drain current path of the second current mirror FET means is established as a function of the bias current flow;

second current control FET means having a channel, a gate, a drain, and a source, the drain and source of the second current control FET means being connected in a second series current path with the source and drain of the second current mirror FET means between the first and second supply means, and the gate of the second current control FET means being connected to the input means to receive the input voltage, so that when the input voltage attains the second voltage level current flow through the source-drain current path of the second current control FET means changes; and

output means connected to the first and second current paths to provide an output which indicates the relationship of the input voltage to the voltage window defined by the first and second voltage levels.

4,543,499

I²L CIRCUITRY HAVING OPERATING CURRENT SUPPLIED BY HIGHER-VOLTAGE CIRCUITRY FABRICATED ON SAME CHIP

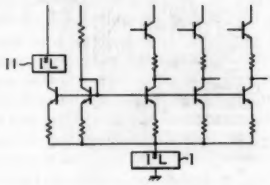
Kenji Kaneko, Hachioji; Minoru Nagata, Kodaira; Makoto Furihata, Gunma; Setsuo Ogura, Takasaki; Takahiro Okabe, Nishitama, and Mitsuya Sato, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 8, 1982, Ser. No. 366,784

Claims priority, application Japan, Apr. 8, 1981, 56-51783

Int. Cl.⁴ H03K *19/091, 19/092*

U.S. Cl. 307—477 **26 Claims**



1. A semiconductor integrated circuit comprising an I²L circuit and a high voltage operation circuit operating at a higher voltage than that of said I²L circuit and implemented in coexistence with said I²L circuit in the same integrated circuit, wherein said I²L circuit is inserted in a series combination with said high voltage operation circuit between a first power supply terminal and a ground line, wherein said I²L circuit is connected between said high voltage operation circuit and said ground line and wherein the current flow through a portion of said high voltage circuit is substantially constant so as to provide a current source for said I² L circuit in addition to other functions and operations inherent to said high voltage operation circuit, to thereby allow the current once utilized by said high voltage operation circuit to be reused by said I²L circuit.

4,543,500

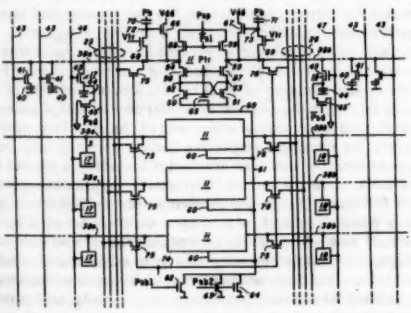
HIGH PERFORMANCE DYNAMIC SENSE AMPLIFIER VOLTAGE BOOST FOR ROW ADDRESS LINES

Joseph C. McAlexander, III, Sugar Land; Lionel S. White, Jr., and G. R. Mohan Rao, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 944,822, Sep. 22, 1978, Pat. No. 4,239,993. This application Oct. 22, 1980, Ser. No. 199,773

Int. Cl.⁴ H03K *5/24;* **G11C** *7/06, 8/00*

U.S. Cl. 307—530 **7 Claims**



1. A sense amplifier for a semiconductor memory device of the type having an array of rows and columns of memory cells at a face of a semiconductor body with each column split into two column line halves and sense amplifiers connected to pairs of sense nodes at ends of each pair of column line halves, comprising:

a pair of cross-coupled driver transistors for each sense amplifier, at least one grounding transistor, and a pair of pull-up transistors for each sense amplifier, each of the transistors having a current path and a control electrode,

means connecting the current path of each one of the driver transistors separately between one of the sense nodes and a grounding node and connecting the current path of the grounding transistor between the grounding nodes of a plurality of sense amplifiers and reference potential,

the current paths of the pull-up transistors being connected separately between the sense nodes and a supply of a given voltage level,

means for precharging the sense nodes to a voltage level prior to an active operating cycle,

means for addressing a selected row of the memory cells in the array at a given time in the beginning of said operating cycle at a voltage of said voltage level,

means for applying a clock voltage to turn on said at least one grounding transistor at a first time subsequent to the said given time in the beginning of an active operating cycle,

coupling means separately connecting the control electrodes of the pull-up transistors to the sense nodes, the coupling means being conductive only for a given voltage differential during the active operating cycle,

means to boost the voltage on the control electrode of one of the pull-up transistors to higher than said voltage level at a time in the active operating cycle following the first time,

said selected row of the memory cells being raised to a voltage higher than said voltage level at a time during said active cycle after said first time.

4,543,501

HIGH PERFORMANCE DYNAMIC SENSE AMPLIFIER WITH DUAL CHANNEL GROUNDING TRANSISTOR

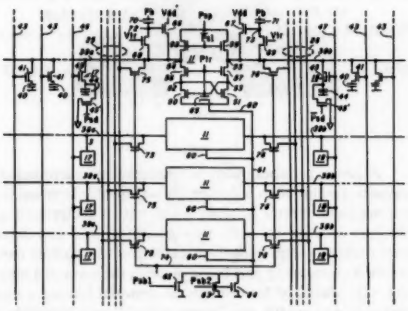
Joseph C. McAlexander, III, Sugarland; Lionel S. White, Jr., and G. R. Mohan Rao, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 199,773, Oct. 22, 1980, , which is a division of Ser. No. 944,822, Sep. 22, 1978, Pat. No. 4,239,993. This application Oct. 15, 1984, Ser. No. 660,770

The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.

Int. Cl.⁴ H03K *5/24;* **G11C** *7/06*

U.S. Cl. 307—530 **4 Claims**



1. A sense amplifier for a semiconductor memory device of the type having an array of rows and columns of memory cells with each column split into two column line halves and sense amplifiers connected to pairs of sense nodes at ends of each pair of column line halves, comprising:

a pair of cross-coupled driver transistors, and first and sec-

ond grounding transistors, each of the transistors being insulated-gate field effect transistors having a source-to-drain current path and a control gate electrode,

means connecting the current path of each of the driver transistors separately between one of the sense nodes and a grounding node and connecting the current paths of both of the grounding transistors in parallel between the grounding node and reference potential,

means for precharging the sense nodes to a voltage level prior to an active operating cycle,

means for addressing a selected row of the memory cells in the array at a given time in the beginning of said operating cycle,

means for applying a first clock voltage to turn on the first grounding transistor at a first time subsequent to the said given time in the beginning of an active operating cycle and for applying a second clock voltage to turn on the second grounding transistor at a second time subsequent to the first time, said first grounding transistor being much smaller than the second grounding transistor,

said second grounding transistor having a dual channel as the current path, and having a common control electrode for the dual channel with the second clock voltage being applied to such common control electrode, one part of the dual channel being implanted at an impurity doping level different from the other part, said one part thereby turning on prior to the other part of the channel.

4,543,502

MAGNETIC RING FOR FREE PISTON RECTILINEAR GENERATORS

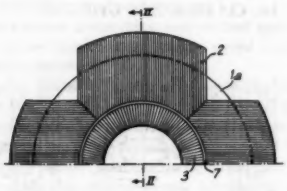
Jacques H. Jarret, 32 allée des Soudanes, 78430 Louveciennes, Yvelines, and Jean-Marie B. Jarret, 21 avenue Foch, 75116 Paris, both of France

Filed Apr. 19, 1984, Ser. No. 602,151

Claims priority, application France, Apr. 20, 1983, 83 06447

Int. Cl.⁴ H02K *33/00*

U.S. Cl. 310—15 **4 Claims**



1. A generator comprising at least one coil surrounded by a magnetic circuit of an inductor for taking-off electrical power, said magnetic circuit forming a gap with a reciprocating mobile part moving between two positions, said gap having a length which varies with displacement of the mobile part, the mobile reciprocating part being made in the form of a magnetic ring with sheets of ferro-magnetic material having a uniform thickness and width and being radially and regularly positioned, the distance between the sheets in the proximity of a residual gap between the magnetic ring and the opposite wall of the magnetic circuit of the inductor being such that the proportion of ferro-magnetic of the magnetic ring in area of said residual gap represents from 50 to 80% of the proportion of sheets in the magnetic circuit of the inductor.

4,543,503

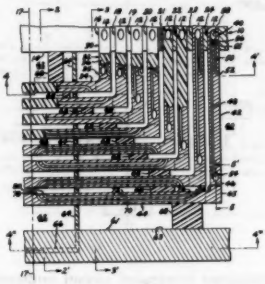
VENTILATED END TURNS FOR ROTOR WINDINGS OF A DYNAMOELECTRIC MACHINE

Christopher A. Kaminski, Schenectady, and Edward K. Williams, Delanson, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1983, Ser. No. 563,330

Int. Cl.⁴ H02K *9/00*

U.S. Cl. 310—59 **13 Claims**



1. In combination with a rotor for a gas cooled dynamoelectric machine, said rotor inlcuding a rotor body defining at least a pair of axial winding slots, one of the at least a pair of winding slots respectively circumferentially disposed at the periphery of the rotor body on respective sides of a pole portion of the rotor body and the rotor body further defining at least one gas discharge flue extending from a pole face of the rotor body to the periphery of the rotor body, the pole face disposed on an axial end of the rotor body, said rotor further including a spindle coupled to the axial end of the rotor body, said spindle for rotatably mounting said rotor, a rotor winding cooling system comprising:

a plurality of axially extending electrical conductors disposed in the winding slots, at least a portion of the axial conductors extending beyond said rotor body to form an axial end turn conductor, at least one of said plurality of axial conductors disposed on each side, respectively, of said pole face, each axial conductor including a first bar of metal, said first bar having a first substantially longitudinal groove for forming a passageway for receiving a first portion of gas, said passageway defined in part by insulation to be interposed between axial conductors within said winding slot for respectively electrically insulating each axial conductor within said winding slot from other axial conductors within said winding slot, respectively, said passageway including first port means for introducing gas into the passageway and second port means for withdrawing gas from the passageway

a plurality of circumferential end turn electrical conductors for respectively electrically connecting the respective at least one of said plurality of axial conductors on one side of the pole face with the respective at least one of said plurality of axial conductors on the other side of the pole face, respectively, for forming a respective current carrying loop, each circumferential end turn conductor including a second bar of metal having a second substantially longitudinal groove for forming a passage for receiving a second portion of gas, said passage defined in part by a member coupled to the second bar, said plurality of circumferential end turn conductors arcuately spanning said pole portion and stacked with electrical insulation interposed between adjacent circumferential end turn conductors, respectively, said passage including third port means for introducing gas into the passage and fourth port means for withdrawing gas from the passage;

a retaining ring affixed to said rotor body and circumferentially surrounding said axial and circumferential end turn conduc-

tors for maintaining said axial and circumferential end turn conductors in fixed spatial relationship against centrifugal and circumferential forces;

a centering ring affixed to said retaining ring and axially spaced from said rotor body to substantially enclose an end turn region about said axial and circumferential end turn conductors, said end turn region defined by the axial end of said rotor body, the radial inner surface of said retaining ring, the radial outer surface of the spindle and the axial surface of said centering ring opposing the axial end of said rotor body, said centering ring further defining an annular space between the radially inward portion of said centering ring and the radially outer portion of the spindle, said annular space for introducing flow of the first and second portion of gas into said end turn region; and

blocking means disposed within said end turn region for preventing gas flow communication between a portion of said end turn region and the balance of said end turn region for forming a low pressure area in said portion of said end turn region, said low pressure area arcuately spanning a predetermined portion of said pole face and a predetermined arcuate portion of said plurality of circumferential end turn conductors, said low pressure area further axially spanning said circumferential end turn conductors, and said low pressure area in gas flow communication with said gas discharge flue, wherein centrifugal pumping action during rotation of said rotor encourages gas to flow through said discharge flue to the periphery of said rotor, thereby reducing the pressure within the low pressure area of said end turn region with respect to the pressure in the balance of said end turn region;

wherein the first and third port means are in gas flow communication with the balance of said end turn region, the second port means is in gas flow communication with the periphery of said rotor and the fourth port means is in gas flow communication with the low pressure area of said end turn region.

4,543,504

ELECTRIC CURRENT RECTIFIER

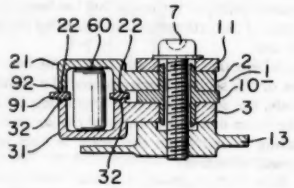
Yoshiyuki Iwaki, Himeji; Hideo Imori, Hyogo, and Hitoshi Gotou, Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,032

Claims priority, application Japan, Nov. 26, 1982, 57-179680[U]

Int. Cl.⁴ H02K *11/00*

U.S. Cl. 310—68 D **8 Claims**



1. A rectifier having a pair of heat dissipating plates at the positive (+) side and the negative (−) side which constitute a full-wave rectification circuit and are positioned in mutual confrontation with a small gap between them, and an insulating material to electrically insulate the both heat dissipating plates, characterized in that a recessed portion is formed in each of the mutually opposed parts of said both heat dissipating plates, then a noise-preventing capacitor element is housed in a closed space defined by said recessed portions to make an outer covering for said capacitor, and said capacitor element and each of said heat dissipating plates are electrically connected.

4,543,505

ELECTRIC TORQUE CONVERTER

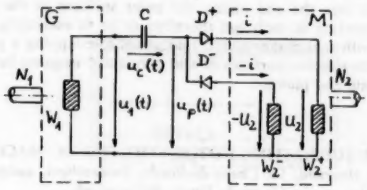
Adam Dittner, Höchstadt, and Georg Hartmann, Paderborn-Dahl, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf aktien, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,777

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225908

Int. Cl.⁴ H02K *49/00*

U.S. Cl. 310—102 R **9 Claims**



1. An electric torque converter, comprising:

an alternating voltage generator having a group of triangularly wound output windings and means for magnetically exciting said windings, the orientation of the windings with respect to the poles of the generator producing approximately triangularly shaped voltage waveforms at an output of each winding;

a dc motor having a group of windings and commutating means for coupling said group of windings of said dc motor to positive and negative terminals of said dc motor; and

electrical rectifier and current limiting means interposed between said terminals of said dc motor and said windings of said generator for converting said triangularly shaped waveforms to a rectified output supplied to said terminals of said dc motor and for limiting the current drawn by said generator to below a predetermined value when the back EMF of said dc motor is at or near zero volts.

4,543,506

PERMANANT MAGNET FIELD TYPE ROTOR STRUCTURE FOR AN ELECTRIC MACHINE

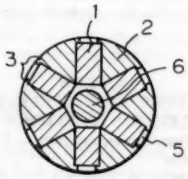
Shigeki Kawada, Hino; Yoichi Amemiya, and Masatoyo Sogabe, both of Hachioji, all of Japan, assignors to Fanuc Ltd., Tokyo, Japan

Continuation of Ser. No. 534,886, Sep. 22, 1983, abandoned. This application Feb. 19, 1985, Ser. No. 702,428

Claims priority, application Japan, Sep. 27, 1982, 57-166697

Int. Cl.⁴ H02K *21/12*

U.S. Cl. 310—156 **9 Claims**



1. A permanent magnet field type rotor structure for an electric machine comprising:

a shaft;

a pair of axially spaced end plates which are secured to the shaft and have respective facing inner walls, each of said inner walls having a recess;

a plurality of permanent magnets each extending radially outward from the shaft and extending axially from end plate to end plate; and

a plurality of yokes arranged between adjacent magnets and extending axially between the end plates for supporting the magnets, the yokes at each end thereof being received by the recess in the inner wall of the respective end plate and wherein the outer surfaces of the yokes define an intermittent cylindrical outer surface, which is tapered so as to have a smaller diameter at each end than in the middle, and the recess of each of the inner walls of the end plate is cylindrically shaped such that the yokes are press-fit into the end plates, the outer surfaces of the yokes tapering at each end therefore to be fit essentially flush with said magnets, and said yokes overlapping a part of the exposed surfaces of said permanent magnets between said end plates.

4,543,507

SELF-SUPPORTING ROTOR COIL FOR DC-MACHINE

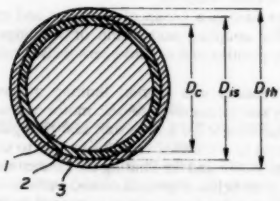
Marc Heyraud, La Chaux-de-Fonds, Switzerland, assignor to Portescap, La Chaux-de-Fonds, Switzerland

Continuation of Ser. No. 63,095, Aug. 2, 1979, abandoned. This application Jul. 1, 1981, Ser. No. 279,315

Claims priority, application Switzerland, Aug. 9, 1978, 8461/78

Int. Cl.⁴ H02K *1/22*

U.S. Cl. 310—266 **1 Claim**



1. A cylindrical, ironless, self-supporting rotor coil for use in a low voltage electrical dc-machine of the kind having a stationary magnetic circuit with an air gap in which the rotor coil is mounted for rotation, said rotor coil comprising a plurality of coil sections connected in series with each other, the ends of each coil section being adapted for connection to respective commutator segments, the rotor coil being formed by at least one layer of wire, the wire having a conductive core, and insulating layers surrounding the said core and an outer layer comprising a supporting material capable of being softened and subsequently solidified, the spaces between laterally adjacent wire parts of the coil being at least in part filled with said supporting material, said outer layer of the wire being at least in part electrically conductive for reducing the production of sparks in the commutator of the dc-machine, wherein said outer layer is made of a thermoplastic polymer incorporating carbon fibers.

4,543,508

CATHODE RAY TUBE WITH AN ELECTRON LENS FOR DEFLECTION AMPLIFICATION

Kimiharu Saito, Hino, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1984, Ser. No. 591,515

Claims priority, application Japan, Apr. 12, 1983, 58-64244; Jul. 20, 1983, 58-132289

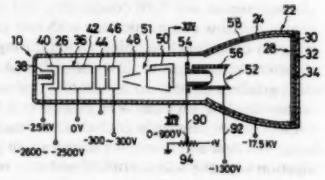
Int. Cl.⁴ H01J *29/70, 29/46*

U.S. Cl. 313—429 **14 Claims**

1. In apparatus including a cathode ray tube having a target, an electron gun for emitting an electron beam directed toward the target deflection means disposed along the path of the beam from the gun to the target for deflecting the beam in two orthogonal directions, a scan expansion lens system disposed between the deflection means and the target for amplifying the deflections of the beam, and a postdeflection electrode disposed adjacent the lens system so that an electric field due to the postdeflection electrode acts at least upon a target side end portion of the lens system, the improvement wherein:

(a) the lens system comprises first and second tubular electrodes of substantially rectangular cross sectional shape disposed in axial alignment to allow the passage of the beam therethrough, each of the first and second electrodes having a beam entrance end directed toward the electron gun and a beam exit end directed toward the target, the second electrode enveloping at least a beam exit end portion of the first electrode with a gap sufficient to provide electrical insulation therebetween;

(b) the first electrode having a first pair of opposite sides oriented in one of the two orthogonal directions of beam deflection and a second pair of opposite sides oriented in the other of the orthogonal directions, the beam exit ends of the first pair of opposite sides being each curved in an arc that is convex in a first direction, the beam exit ends of the second pair of opposite sides being each curved in an



arc that is convex in a second direction opposite to the first direction; and

(c) the apparatus further includes means for applying such electrical potentials to the first and second electrodes of the lens system and to the postdeflection electrode that there are created:

(1) a first electron lens composed of the first and second electrodes for amplifying beam deflection in said one of the orthogonal directions by inverting within the second electrode the traveling direction of the beam that has been deflected in said one of the orthogonal directions by the deflection means, the first electron lens being further effective to amplify beam deflection in said other of the orthogonal directions by acting within the second electrode the beam that has been deflected in said other of the orthogonal directions by the deflection means; and

(2) a second electron lens composed of the beam exit end portion of the second electrode and the postdeflection electrode, the second electron lens being located adjacent the beam exit end portion of the second electrode and acting to converge the beam in said one of the orthogonal directions.

4,543,509

OFF-AXIS ELECTRON GUN

Ronald M. Hutcheon, Deep River, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

Filed May 4, 1983, Ser. No. 491,400

Claims priority, application Canada, Dec. 23, 1982, 418445

Int. Cl.⁴ H01J *29/48, 29/62*

U.S. Cl. 313—454 **9 Claims**

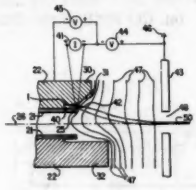
1. An electron gun for producing a beam of electrons directed along a beam axis with the beam current density maximum on the beam axis comprising:

an arcuate wire for emitting electrons, the arcuate wire being a partial annulus subtending an azimuthal angle of

up to 125° about the axis at a predetermined distance from the axis,

means for directing the emitted electrons towards the beam axis at a predetermined angle,

means for focussing the emitted electrons into an electron beam,



means for deflecting the emitted electrons onto the beam axis, said directing means, focussing means and deflecting means being at the same potential and producing an asymmetric electric field about the beam axis; and

anode means positioned about the beam axis facing the arcuate wire at a predetermined distance along the beam axis.

4,543,510

LIQUID COOLED CATHODE RAY TUBE WITH REDUCED INTERNAL REFLECTANCE

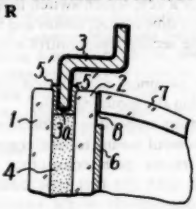
Tomosuke Chiba, Matsudo; Hiroshi Kato, Kawasaki, and Takashi Suganuma, Hiratsuka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,750

Claims priority, application Japan, Mar. 10, 1982, 57-37456

Int. Cl.⁴ H01J *31/00, 7/24*

U.S. Cl. 313—477 R **5 Claims**



1. A cathode ray tube apparatus comprising:

(a) an envelope having a panel portion with a phosphor screen formed on the inner surface thereof, a neck portion provided with an electron gun therein, and a funnel portion therebetween;

(b) a transparent panel facing an external surface of said panel portion with a spacer therebetween confined at the peripheral edges thereof; and

(c) a liquid coolant between said panel portion and said transparent panel, sealed therein at the peripheral edges with a blackened light absorbing sealing material, the compression of said panel portion and said transparent panel causing the sealing material to envelop said spacer a sufficient amount to significantly reduce light reflected back into the interior of said tube.

4,543,511

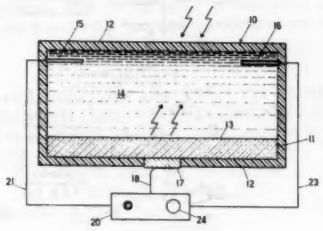
SEMICONDUCTOR ELECTRODES HAVING REGIONS OF GRADED COMPOSITION EXHIBITING PHOTOLUMINESCENCE AND ELECTROLUMINESCENCE

Arthur B. Ellis, Madison, Wis., and Holger H. Streckert, San Diego, Calif., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 24, 1983, Ser. No. 478,476

Int. Cl.⁴ H05B *33/14;* **H01L** *33/00*

U.S. Cl. 315—169.3 **23 Claims**



1. A photoemissive device, comprising:

(a) an emissive electrode including a substrate having a base lattice formed of a solid solution of a metal element and a non-metal element which together have a characteristic emission spectrum, a substituent element substituted in a surface layer of the substrate for the element of like metal or non-metal character, the substituent and the element of opposite metal or non-metal character together having a characteristic emissive spectrum centered at a wavelength substantially different from that at which the emission spectrum of the unsubstituted base lattice is centered, the degree of substitution of the substituent decreasing with depth from the surface; and

(b) means for applying an electrical potential between the substituted surface of the emissive electrode substrate and the base lattice of the electrode substrate such that variation of the applied potential will change the emission spectrum of the emitted radiation.

4,543,512

ELECTRON BEAM EXPOSURE SYSTEM

Mamoru Nakasuji, Yokohama, and Hirotsugu Wada, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 8, 1981, Ser. No. 309,780

Claims priority, application Japan, Oct. 15, 1980, 55-143946; Oct. 23, 1980, 55-148693

Int. Cl.⁴ H01J *29/58*

U.S. Cl. 315—382 **10 Claims**

1. An electron beam exposure system having an electron optical column defining an axis, comprising:

an electron gun for emitting an electron beam and forming a crossover of the electron beam;

a first aperture for shaping a sectional shape of the electron beam emitted from said electron gun into a predetermined shape;

means for converging the electron beam passed through said first aperture to form a crossover image;

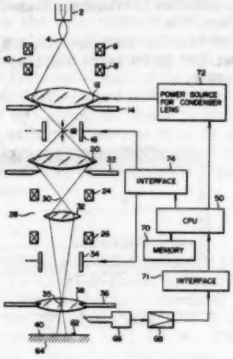
a second aperture to which is projected the electron beam emerging from the crossover image;

means interposed between said first and second apertures for deflecting the electron beam, said deflecting means having the crossover image and a deflection center in a space defined thereby;

means for projecting the electron beam passed through said second aperture onto a target plane to form a beam spot of

rectangular shape by superposition of images by said first and second apertures;

means for detecting a fluctuation of at least one of two sides of the beam spot defined by the image of said second aperture in a direction perpendicular to the axis of the



electron optical column when said deflecting means deflects the electron beam to change a size of the rectangular beam spot; and

means for driving said converging means according to the detected fluctuation to reduce the fluctuation.

4,543,513

METHOD AND AN APPARATUS FOR CONTROLLING A.C. ROTATING MACHINERY POWER PLANTS

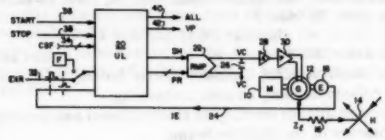
Maurizio Checchetti, Piazza Sicilia, 1 - Milano, Italy

Filed Jul. 27, 1983, Ser. No. 517,595

Claims priority, application Italy, Aug. 3, 1982, 22723 A/82

Int. Cl.⁴ H02P 7/74

U.S. Cl. 318—158 **5 Claims**



1. A method for controlling electric power stations equipped with a.c. rotating machines, for electric networks including one or more pairs generator-motor, each generator being individually controlled in the phase locking mode, characterized in that it comprises: generating a pulse sequence related to the quantity to be controlled, generating a reference pulse sequence, detecting the phase shift between corresponding pulses of each sequence, generating a ramp signal having a sign and a slope proportional to the phase shifts between said pulses, integrating said ramp signal and using the integrated signal to control the generator field excitation.

4,543,514

CENTRAL LOCKING SYSTEM FOR MOTOR VEHICLES

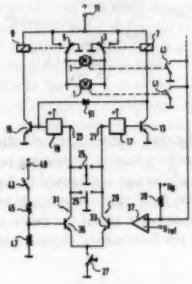
Rainer Fey, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,448

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 3319830

Int. Cl.⁴ F05B 47/00

U.S. Cl. 318—282 **12 Claims**



1. In a central locking system for motor vehicles in which the ignition and/or a starter can be switched on and off by means of a control switch operable by means of a key, said system having a plurality of catch drives reversibly driving between a locking position and an unlocking position, a first time control means which on triggering supplies first drive signals for a predetermined time duration to the catch drives which drive the catch drives in the direction towards the locking position, a second time control means which on triggering supplies second drive signals for a predetermined time duration to the catch drives which drive the catch drives in the direction towards the unlocking position, and at least one triggering control switch operable from outside the motor vehicle by means of a key, which switch in a first switch position triggers the first time control means and in a second switch position triggers the second time control means, the provision of

(a) at least one common press-button control switch for operation within the motor vehicle;

(b) trigger paths for respective connection of the first and second time control means to said common press-button switch, said trigger path connecting the press-button control switch with the first time control means being triggerable independently of the switch position of the control switch and comprising:

a first gate circuit responding to the drive position of the catch drives which blocks the trigger path when the catch drives are in the locking position, and enables the first time control means to be triggered by the press-button control switch when the catch drives are in the unlocking position,

said trigger path connecting the press-button control switch with the second time control means comprising:

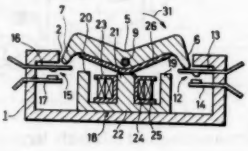
a second gate circuit controllable through the control switch which blocks the trigger path when the control switch is switched off and enables the second time control means to be triggered by the press-button control switch when the control switch is switched off; and

(c) a blocking circuit responding to the drive signals of the first time control means for blocking the drive signals of the second time control means during the occurrence of the drive signals of the first time control means.

4,543,515
MOTOR CONTROLLING SWITCH DEVICE

Masaru Suzuki, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Jun. 19, 1984, Ser. No. 622,254
Claims priority, application Japan, Jun. 20, 1983, 58-111716
Int. Cl.⁴ H02P *1/22;* **H01H** *83/22*
U.S. Cl. 318—293 **8 Claims**



1. A switch device for controlling an electric motor comprising:

an operating member for taking an original position and an operating position for enabling a supply voltage to be applied to the motor;

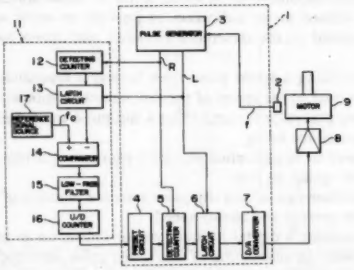
means for applying a restoring force to said operating member when said operating member is in said operating position to urge said operating member to move from said operating position to said original position; and

an electromagnetic device for receiving said supply voltage and for producing a first magnetic force stronger than said restoring force to attract and to hold said operating member in said operating position, said electromagnetic device also for receiving current flowing in said motor and for producing a second magnetic force equal in strength to said first magnetic force in response to a predetermined condition of the motor, said second magnetic force controlling said first magnetic force to enable said restoring force to restore said operating member to said original position responsive to the occurrence of the predetermined condition of the motor.

4,543,516
SPEED AND PHASE CONTROL SYSTEM

Yasunori Kobori, Yokohama; Kaneyuki Okamoto; Isao Fukushima, both of Katsuta; Masataka Sekiya, Mito; Hideo Nishijima, Katsuta; Kenji Kano, Mito, and Tetsuo Sakae, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1984, Ser. No. 682,259
Claims priority, application Japan, Dec. 22, 1983, 58-242519
Int. Cl.⁴ H02P *5/06*
U.S. Cl. 318—318 **6 Claims**



1. A speed and phase control system for a moving apparatus driven by a drive source to effect predetermined movement comprising:

speed control means for detecting an actual speed of said moving apparatus to thereby control said moving apparatus to make the actual speed be an initially set predetermined value;

phase control means for detecting a phase position of said moving apparatus to thereby synchronize the phase of said moving apparatus with a reference signal;

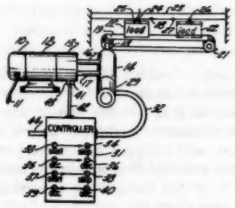
error correcting means storing therein a target value of speed and for detecting an error between said actual speed and said target value to thereby correct said initially set value in accordance with said error; and

change-over means for effecting a change-over operation to stop the operation of said error correcting means and simultaneously start the operation of said phase control means when said error becomes a predetermined value.

4,543,517
ELECTRONIC POSITION AND VELOCITY CONTROL SYSTEM WITH COLD START COMPENSATION

Joseph C. Poppelreiter, II, Dearborn, Mich., assignor to Kubik, Incorporated, Troy, Mich.

Filed Aug. 30, 1982, Ser. No. 412,539
Int. Cl.⁴ G05D *23/19;* **G05B** *13/00*
U.S. Cl. 318—632 **4 Claims**



1. In a system for controlling the extent of movement of a movable member with respect to a fixed member and for effecting velocity changes at arbitrarily selected locations along the path of movement of the movable member during each cycle of the system, the system including means for providing a variable voltage which varies in direct relationship with the position of the movable member, first and second means for providing first and second reference voltages, respectively, which provide a voltage level representative of first and second arbitrarily selected locations on the path of movement of the movable member along the fixed member where first and second changes in velocity occur, first and second voltage comparison means each receiving the variable voltage as one input and one of the first and second reference voltages as another input, respectively, and generating comparison signals when the variable voltage and one of the first and second reference voltages are substantially equal and utilization means, responsive to the comparison signals, for changing the velocity of movement of the movable member a first time when the first comparison means yields the comparison signal and for changing the velocity of the movable member a second time when the second comparison means ceases provision of the comparison signal, the improvement comprising:

means for incrementally varying one of the first or second reference voltage levels for a predetermined period of time after energization of the system so as to vary one of the first and second arbitrarily selected locations along the path of movement where a change in velocity of the movable member occurs, the incrementally varying means being responsive to successive cycles of the systems after energization of the system and including:

amplifier means for providing a voltage output, the output from the amplifier means being connected as an input to one of the first and second means for providing first and second reference voltages; and

voltage step means, responsive to the cycling of the system, for providing an incrementally increasing voltage to the amplifier means so as to incrementally vary its output.

4,543,518

STATIC TRACTION/BRAKING SWITCH-OVER CIRCUIT FOR A VARIABLE SPEED SYSTEM INCLUDING AN ASYNCHRONOUS MOTOR POWERED BY CURRENT SWITCHING

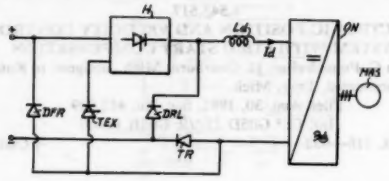
Bernard Guilloux, Meyzieu, France, assignor to CEM-Compagnie Electro-Mecanique et Compagnie, Paris, France

Filed Mar. 30, 1984, Ser. No. 595,151

Claims priority, application France, Mar. 30, 1983, 83 05228

Int. Cl.⁴ H02P *3/18;* **H02M** *7/515*

U.S. Cl. 318—757 **4 Claims**



1. A static traction/braking switch-over circuit device for a variable speed system having a DC power source with first and second terminals and an electric motor supplied from said power source by means of a chopper provided with a forced extinction means, said chopper being interposed in series between said motor and said first terminal of said power source, said switch-over device comprising reversing means for reversing the current from the terminals of said power source, said reversing means comprising a line switch interposed in series between said electric motor and said second terminal of said power source, a first diode (DFR) connected to a point between said first terminal and chopper and connected in reverse polarity to the terminals of said power source via said line switch, and a second diode (DRL) connected to a point between said second terminal and said line switch and connected in reverse polarity to the terminals of said power source via said chopper, said line switch comprising a traction/braking switching thyristor (TR) extinguished by said forced extinction means of said chopper.

4,543,519

METHOD AND APPARATUS FOR STOPPING A RAPIDLY ADVANCING FILAMENT

Horst Wolf, Albershausen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,922

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931930

Int. Cl.⁴ H02P *3/18*

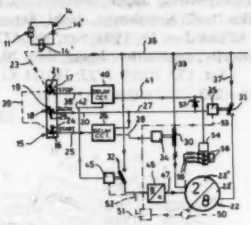
U.S. Cl. 318—759 **12 Claims**

1. A method of operating a filament-advancing system wherein an asynchronous electric motor powered from an alternating-current source and having a plurality of separate windings forming separate poles has a rotary output speed directly related to the advance speed of the filament, said method comprising the steps of:

normally driving said motor at a relatively high nominal speed by connecting a relatively small group of poles to said source; and

stopping the advance of said filament by

substantially simultaneously disconnecting said relatively small group of said poles from said source and from any other source and connecting a relatively large group of said poles to said source to operate said motor hypersynchronously generator-fashion for a relatively short time, and



thereafter disconnecting said relatively large group of poles from said source and energizing said small group with direct-current voltage until said motor stops.

4,543,520

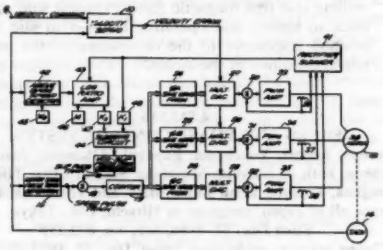
INDUCTION MOTOR SLIP CONTROL

George E. Danz, Radford, and C. Calvin Shuler, Salem, both of Va., assignors to Kollmorgen, Technologies Corporation, Dallas, Tex.

Filed Dec. 30, 1983, Ser. No. 567,339

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 318—807 **2 Claims**



1. A servo control system for an AC induction motor comprising:

a servo loop responsive to the speed of the AC induction motor and a desired speed indication to provide an error signal proportional to the difference between said speed indications;

means providing a speed pulse train having a repetition rate proportional to the speed of the AC induction motor;

a slip pulse generator for providing a slip pulse train, said slip pulse generator being

responsive to an indication of motor excitation current, and to motor speed, so that

the repetition rate of said slip pulse train is a function of both motor current and motor speed;

means providing a digital rotating vector indication in accordance with the summation of said speed pulse train and said slip pulse train; and

conversion means for providing a synthesized sine wave excitation for the AC induction motor

in accordance with the phase and frequency of said vector indication, and

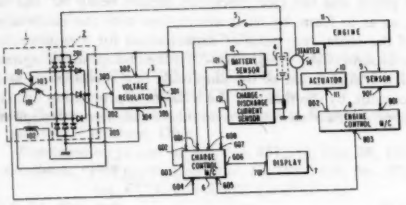
with an amplitude proportional to said error signal.

4,543,521

CHARGE CONTROL MICROCOMPUTER DEVICE FOR VEHICLE

Mitsuharu Morishita, and Shinichi Kouge, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 17, 1983, Ser. No. 495,330
Claims priority, application Japan, May 18, 1982, 57-85204
Int. Cl.[4] H02J 7/14
U.S. Cl. 320—64 **4 Claims**



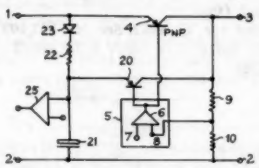
1. A charging system for a vehicle, comprising:
an AC generator driven by an engine, said generator having a rectifier, armature coils and a field coil;
means for supplying generated voltage data from said generator;
a battery charged by a rectified output of said generator;
means for supplying battery terminal voltage data from said battery;
a voltage regulator for controlling the current in said field coil, to control an output voltage of said generator to a predetermined value;
means for supplying engine data from said engine;
an engine controlling microcomputer for receiving said engine data, to control said engine;
a charging control microcomputer for setting a reference voltage for said voltage regulator according to said engine data, said battery terminal voltage data and generated voltage data, and for detecting failures according to any of said data and;
a display unit for displaying results of detecting of said charging control microcomputer.

4,543,522

REGULATOR WITH A LOW DROP-OUT VOLTAGE

Jean M. Moreau, Grenoble, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 18, 1983, Ser. No. 553,482
Claims priority, application France, Nov. 30, 1982, 82 20046
Int. Cl.[4] G05F 5/00
U.S. Cl. 323—303 **7 Claims**



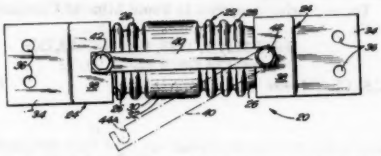
1. A voltage regulator comprising an input; an output; and a ground line; a first PNP transistor having an emitter connected to said input, a collector connected to said output, and a base for receiving a regulation control voltage; a second PNP transistor having a collector connected to said output, a base for receiving said regulation control voltage, and an emitter; charging means connected between the emitter of said first transistor and the emitter of said second transistor; and a storage capacitor connected between the emitter of said second transistor and said ground line.

4,543,523

TEST TERMINAL FOR USE IN AN ELECTRIC POWER TRANSMISSION SYSTEM

John H. Moran, Stafford, N.Y., assignor to Interpace Corporation, Parsippany, N.J.

Filed Apr. 22, 1983, Ser. No. 487,882
Int. Cl.[4] G01R 31/02
U.S. Cl. 324—51 **4 Claims**



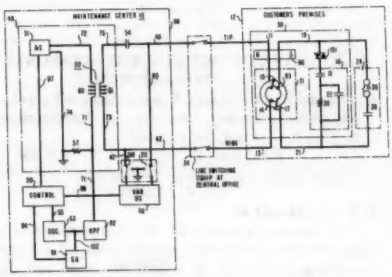
1. A test terminal for use in an electric power transmission system, said terminal comprising:
a unitary ceramic element including a central portion having a generally cylindrical external surface and end portions extending axially from said central portion and having undulating external surfaces;
an exposed electrically conductive glaze localized on said cylindrical surface and providing a guard electrode of sufficient width that a clamp of a test lead can be attached thereto;
an exposed electrically insulative glaze localized on said undulating surfaces;
a pair of end fittings of electrically conducting material secured to opposite ends of said element; and
an elongated electrical conductor connected to one of said end fittings and detachably connected to the other of said end fittings.

4,543,524

BIASED REACTOR MAINTENANCE TERMINATION UNIT

Raymond M. Bulley, Hanover Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 20, 1983, Ser. No. 515,537
Int. Cl.[4] H04B 3/46; G01R 31/08
U.S. Cl. 324—52 **10 Claims**



1. An apparatus for locating faults in a transmission line comprising:
a saturable core reactor adapted to be connected in series with the transmission line,
the reactor further comprising a core with a plurality of windings,

a permanent magnet located adjacent to the reactor for creating a magnetomotive bias in the core,

means for generating an ac signal that will switch the reactor alternately between its two states,

means for supplying a dc signal to the reactor so that the magnetomotive bias can be canceled, and

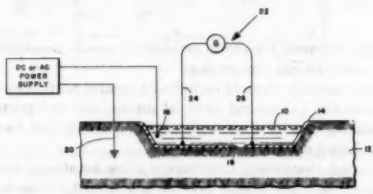
means for detecting the cancellation of the magnetomotive bias.

4,543,525

METHOD FOR DETERMINING A LEAK IN A POND LINER OF ELECTRICALLY INSULATING SHEET MATERIAL

Daniel A. Boryta, Downingtown, Pa., and Misac N. Nabighian, Tucson, Ariz., assignors to Foote Mineral Company, Exton, Pa.

Filed May 9, 1983, Ser. No. 492,733
Int. Cl.[4] G01R *31/08, 31/12*
U.S. Cl. 324—54 **18 Claims**



1. The method for determining the location of a leak in a pond liner made of a sheet of electrically insulating material supported by a medium which is electrically conductive which comprises the steps of:

introducing a single power electrode to said pond at a predetermined location and establishing therewith an electric potential between an electrically conductive fluid within said pond and said supporting medium,

introducing to said pond detector means comprising a pair of electrically connected, spaced, electrically conductive probes,

while maintaining said power electrode at said predetermined location aligning said probes to obtain a maximum flow of current through said probes, and

while maintaining said alignment of said probes causing the probes of said detector means to traverse over the bottom of said pond adjacent said liner until a point is reached where the current substantially changes in value and which thereby is indicative of the leak location.

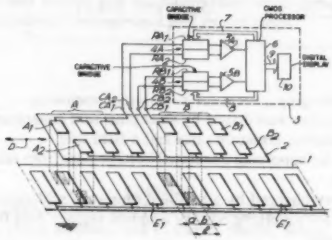
4,543,526

CAPACITIVE DEVICE FOR THE MEASUREMENT OF DISPLACEMENTS

Christophe W. Burckhardt, Renens; Jacques Fournier, Ecublens, and Philippe Stauber, Lausanne, all of Switzerland, assignors to Tesa S.A., Vaud, Switzerland

Filed Jun. 28, 1983, Ser. No. 508,898
Claims priority, application Switzerland, Jul. 7, 1982, 4133/82
Int. Cl.[4] G01R *27/26*
U.S. Cl. 324—61 R **11 Claims**

1. A capacitive device for the measurement of the relative displacement of the scale and the slide of a length or angle measuring instrument in which the scale and the slide are provided with series of electrodes aligned in the direction of their relative displacement and arranged and electrically fed in such a manner as to form, by their combination, a plurality of electric capacitances adapted to produce a periodic signal the number of periods of which is proportional to this displacement and in which the electrodes of the slide are connected to an electronic processing circuit adapted to produce a digital end-of-measurement signal of this displacement by counting the number of these periods and interpolating within each of them, characterized by the fact that the electrodes (E_1) of the scale (1) are spaced uniformly apart in the direction of its length, by the fact that at least a part of the electrodes of the slide (2) are distributed in two groups (A, B), each comprising at least one pair of electrodes (A_1–B_1, A_2–B_2) in which the two electrodes are insulated from each other, arranged above the region of the electrodes (E_1) of the scale and fed by a digital signal generator, these two electrodes being furthermore 180° out of phase and the two electrode groups being 90° out of phase, so as to form, by their association with the electrodes (E_1) of the scale, two pairs of capacitances for measurement against ground (CA_1–CA_2, CB_1–CB_2) the change in the signals of which is significant of the amplitude and direction of said displacement, by the fact that the electronic processing circuit (3) comprises two switched reference capacitance groups of



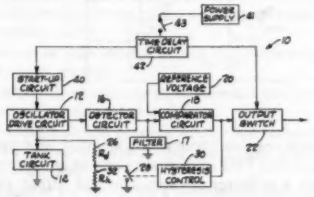
MOS type (RA_1–RA_2, RB_1–RB_2) of binary order-connected in a bridge with the measurement capacitances so as to form two capacitive bridges (4A, 4B), two comparators (5A, 5B) each connected to one of these two bridges, and a processor (6) of CMOS type having two inputs connected to these two comparators and two feedback outputs (7, 8) connected to the two capacitive bridges and the circuit of which comprises modules (12, 13) adapted to effect a digital interpolation within each period, periodically reestablishing, under control by the digital signal generator, the balance of the capacitive bridges by switching of the reference capacitances (CR), the position of the switches (11) of these capacitances giving upon each balancing the digital equivalent of the displacement, the counting of the periods being possibly furthermore effected between these balancing operations by the intervention of a pulse generator.

4,543,527

PROXIMITY SWITCH EXHIBITING IMPROVED START-UP CHARACTERISTICS

Russell P. Schuchmann, Milwaukee, and Donald L. Van Zeeland, Greenfield, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 12, 1982, Ser. No. 367,493
Int. Cl.[4] G01B *7/14;* **G01V** *3/10;* **H03B** *5/00*
U.S. Cl. 324—207 **15 Claims**



1. A proximity circuit for sensing a target location comprising a sensing circuit for establishing a sensing field having a predetermined value, the presence of said target changing said

value, detecting means for detecting changes in said value, a drive circuit for energizing said sensing circuit to a first energy level to maintain said field, a start-up circuit coupled to the drive circuit to increase energization of said sensing circuit by said drive circuit to a second energy level, and a time delay circuit coupled to said start-up circuit to activate the start-up circuit for a predetermined time after energization of the proximity circuit, said delay circuit also coupled to the detecting means to deactivate the detecting means for approximately the same predetermined time.

4,543,528

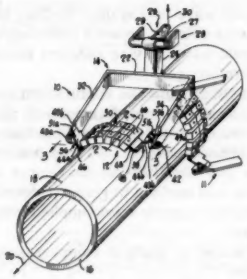
FLEXIBLE PROBE ASSEMBLY FOR USE IN NONDESTRUCTIVE TESTING OF A CONVEX WORKPIECE SURFACE

John P. Baraona, Parma, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 431,213, Sep. 30, 1982, abandoned. This application Mar. 18, 1983, Ser. No. 476,772

Int. Cl.⁴ G01N *27/72;* **G01R** *33/12*

U.S. Cl. 324—262 **18 Claims**



1. A test apparatus for use in non-destructive testing of a workpiece having a contoured external surface, said apparatus comprising:

a flexible probe assembly including a plurality of spaced test heads and securing means to flexibly secure said plurality of test heads to each other such that a test head is adjacent at least one other test head, the plurality of adjacent test heads when in use being spaced transversely to a workpath of such workpiece;

urging means operatively connected to said flexible probe assembly for urging said flexible probe assembly into contact with such external surface of such workpiece; and,

tensioning means for tensioning said flexible probe assembly as the urging means brings the probe assembly into contact with the workpiece so that the urging and tensioning means co-act to bring said probe assembly into conformity with at least a portion of such external surface to maintain said plurality of test probes in juxtaposition with such surfaces of a workpiece as such workpiece and the assembly move relatively along said workpath.

4,543,529

METHOD OF TUNING AN NMR APPARATUS

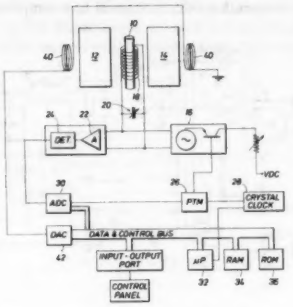
Gary L. Mee, and M. Robert Willcott, both of Houston, Tex., assignors to NMR Imaging, Inc., Houston, Tex.

Filed Jan. 4, 1983, Ser. No. 455,561

Int. Cl.⁴ G01R *33/08*

U.S. Cl. 324—313 **2 Claims**

1. A method of tuning an NMR machine to bring the Larmor frequency of the selected nuclei into phase with the alternating magnetic field of the machine comprising the steps of locating a specimen in the static magnetic field, generating alternating magnetic field pulses having the Larmor frequency of the selected nuclei of the specimen, measuring the primary echo train of a selected nuclear magnetic resonance signal, changing the strength of the static electrical field to change the Larmor frequency of the selected nuclei, repeating the measuring and changing steps until the maximum primary echo train is obtained, and holding the stationary magnetic field at that strength to measure the desired nuclear magnetic resonance by the spin-echo method.



4,543,530

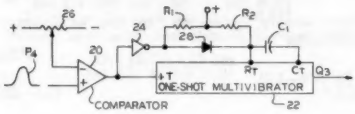
METHODS OF AND MEANS FOR DETERMINING THE TIME-CENTER OF PULSES

John P. Kovach, Euless, Tex., assignor to Del Norte Technology, Inc., Euless, Tex.

Filed Aug. 11, 1982, Ser. No. 407,312

Int. Cl.⁴ H03K *5/153;* **G01R** *29/027*

U.S. Cl. 328—108 **1 Claim**



1. A pulse center detector comprising a two input comparator having a reference voltage applied to one of said inputs and a pulse applied to the other of said inputs, said comparator having an output signal beginning when the voltage of said pulse rises above a threshold set by said reference voltage and ending when the voltage of said pulse falls below said threshold, a one-shot multivibrator having a time constant controlled by a capacitor, two parallel paths for controlling the charging of said capacitor, switch means responsive to the output signal of said comparator for opening and closing one of said two paths, said capacitor initially charging at one rate responsive to the operation of said switch means during said output signal and completing said charging at twice said one rate responsive to the operation of said switch means after said output signal, the time period required to complete the charge of said capacitor at twice said one rate being a period of constant duration taken relative to the center of said pulse.

4,543,531

DIGITAL DATA DETECTING APPARATUS

Junkichi Sugita, Ebina, and Hiroaki Yada, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,118

Claims priority, application Japan, Nov. 17, 1982, 57-201659

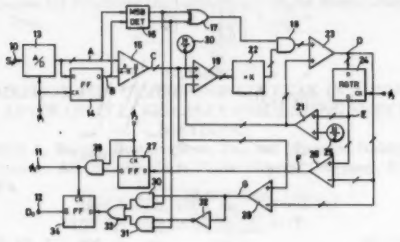
Int. Cl.⁴ H03D *3/18*

U.S. Cl. 329—50 **5 Claims**

1. A digital data detecting apparatus comprising:

(a) means for sampling an input digital signal at a frequency which is M times (M>1) higher than a channel bit rate;

(b) means responsive to two adjacent sampled values for computing an interval from a point where said digital signal intersects a reference level to a sampling time; and



(c) means responsive to an output from said computing means for generating a data detecting signal for detecting data of the digital signal.

4,543,532

DIGITAL FM DEMODULATOR

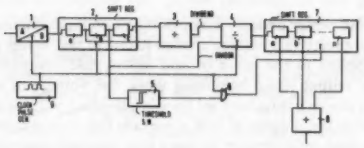
Jürgen Kässer, Diekholzen, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Apr. 1, 1983, Ser. No. 481,365

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212054

Int. Cl.⁴ H03D *3/00*

U.S. Cl. 329—110 **18 Claims**



1. Demodulator for directly demodulating the frequency modulation of frequency modulated (FM) signals converted into a succession of digitally coded samples, comprising:

first storage means for storing at least three successive recent digitally coded samples of said FM signals;

means for adding two of said stored samples, one of which is more recent and the other of which is less recent than a third sample;

means for dividing the output of said adding means by the value of said third sample and thereby producing a quotient signal such that a succession of quotient signals is representative of a desired demodulated FM signal:

second storage means for storing a predetermined number of said quotient signals which are produced in succession by said divider, and

second adding means connected to said additional storage means for adding together the quotient signal in said storage means and thereby providing an output which is representative of a moving average of said quotient signals.

4,543,533

PARAMETRIC AMPLIFIER

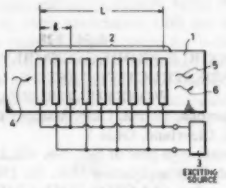
Shoichi Minagawa, and Takeshi Okamoto, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1983, Ser. No. 527,692

Claims priority, application Japan, Sep. 1, 1982, 57-153044; Sep. 1, 1982, 57-153045

Int. Cl.⁴ H03F *7/00*

U.S. Cl. 330—5.5 **3 Claims**



1. A parametric surface-acoustic-wave amplifier which comprises:

a surface acoustic wave propagation medium having a nature to produce a different between travelling velocities of surface acoustic waves having different frequencies and travelling therethrough;

an input transducer provided on said medium to convert an input electric signal into a surface acoustic wave;

an output transducer provided on said medium to convert said surface acoustic wave into an output electric signal;

exciting means provided between said input and output transducers on said medium to give a parametric interaction to said surface acoustic wave supplied from said input transducer; and

power source means to apply a pumping power to said exciting means,

said exciting means including a plurality of parameter changing regions disposed in a periodic alignment having a cycle length l to change a parameter of said medium in response to said pumping power applied thereto, said cycle length being chosen such that for an angular signal input frequency ω, equal to the sum of the frequency ω_3 of the exciting source and the frequency ω_2 of the idler wave motion resulting from said parametric interaction, said cycle length of said parameter changing regions is related to the wave numbers β_1 and β_2 in said medium corresponding to the frequencies ω_1 and ω_2 respectively by the approximate relationship $2\pi/l \simeq \beta_1 + \beta_2$.

4,543,534

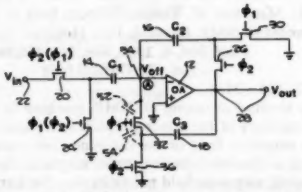
OFFSET COMPENSATED SWITCHED CAPACITOR CIRCUITS

Gabor C. Temes, and Kenneth W. Martin, both of Los Angeles, Calif., assignors to The Regeants of University of Calif., Berkeley, Calif.

Filed May 4, 1984, Ser. No. 607,254

Int. Cl.⁴ H03F *1/14*

U.S. Cl. 330—9 **17 Claims**



1. A low slew rate switched capacitor system including

sampling and reset intervals during each cycle of operation of said system, comprising:

an operational amplifier;

an input capacitor connected to one input of said operational amplifier;

means for receiving a source of input signals to be amplified and applying such signals to said input capacitor;

a feedback capacitor connected in circuit between the said one input and the output of said operational amplifier;

a compensating capacitor connected in a second circuit between the output of said operational amplifier and said one input to said operational amplifier; and

switching circuit means for maintaining the output of the operational amplifier during the reset phase of the cycle close to the output level during the sampling phase of the system switching cycle, said switching circuit means including means for first, connecting said input capacitor to the signal source and said feedback capacitor in circuit from said one input to the output of said integrating amplifier, while isolating said compensating capacitor; and secondly, opening the circuitry from said signal source to said input capacitor, and from said feedback capacitor to said output, while concurrently closing the circuit including said compensating capacitor, and grounding the input to said input capacitor.

4,543,535

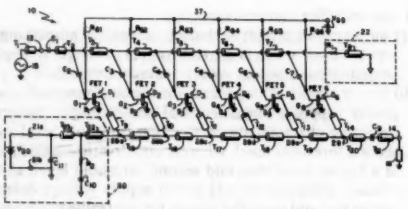
DISTRIBUTED POWER AMPLIFIER

Yalcin Ayasli, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 16, 1984, Ser. No. 600,871

Int. Cl.⁴ H03F *3/60*

U.S. Cl. 330—53 **21 Claims**



1. A distributed amplifier having an input terminal and an output terminal comprising:

a plurality of successively coupled transistors, each one thereof having an input electrode and an output electrode;

first means including a plurality of capacitors for capacitively coupling each one of the input electrodes of the plurality of transistors to the input terminal; and

second means for cascade interconnecting the output electrode of each transistor having a first end coupled to the output terminal.

4,543,536

CHARGE AMPLIFIER WITH AUTOMATIC ZERO

Richard H. Pederson, Marshalltown, Iowa, assignor to Fisher Controls International, Inc., Marshalltown, Iowa

Filed Mar. 22, 1984, Ser. No. 592,053

Int. Cl.⁴ H03F *3/68*

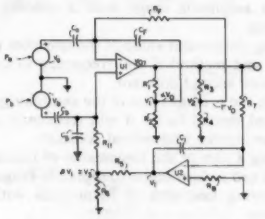
U.S. Cl. 330—85 **13 Claims**

9. A charge amplifier for amplifying extremely small signals in a hostile environment that precludes the use of large value resistors comprising;

an operational amplifier of nominal characteristics and offset voltage having an output terminal and two input terminals;

a resistance-capacitance network coupled between said output terminal and one of said input terminals;

magnification means comprising a first voltage divider connected across the output terminal of said operational amplifier and connected to the resistance in said resistance-capacitance network for magnifying the apparent value of the resistance and a second voltage divider coupled across the output terminal of said operational amplifier and connected to the capacitance in said resistance-capacitance network for magnifying the impedance of the capacitance; and



feedback means for nullifying the effects of said magnification means on said offset voltage of said operational amplifier, said feedback means including a third voltage divider connecting its output to the other of said input terminals of said operational amplifier, said magnification means enabling independent adjustment of the overshoot characteristics and cutoff frequency of said operational amplifier.

4,543,537

METHOD OF AND ARRANGEMENT FOR CONTROLLING THE GAIN OF AN AMPLIFIER

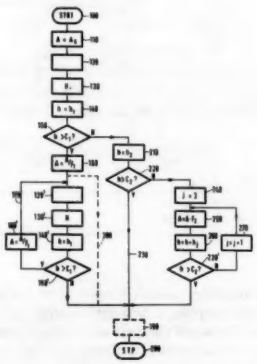
Michael H. Kuhn, Hamburg; Herbert Piotrowski, Oersdorf, and Rudolf Geppert, Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1984, Ser. No. 602,851

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314570

Int. Cl.⁴ H03G *3/20*

U.S. Cl. 330—129 **9 Claims**



1. A method of controlling the gain of an amplifier, in which method a signal is applied to the amplifier and the output signal therefrom is digitized in an analog-to-digital converter; characterized in that the method comprises the steps:

(a) setting the amplifier gain to an initial value;

(b) inputting a sample of said digitized output signal for a predetermined period of time;

(c) deriving a histogram from said signal sample, said histogram representing the frequency with which the ampli-

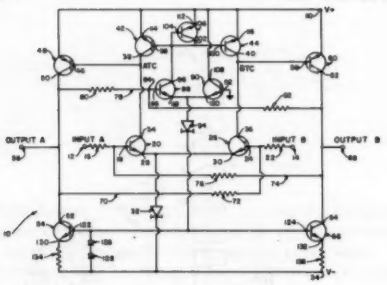
tude of said signal sample occurs in each of different consecutive amplitude ranges;
(d) comparing the frequency of occurrences in the highest amplitude range with a predetermined first constant;
(e) reducing the present value of the amplifier gain by a predetermined first factor, storing this reduced value and terminating the method if said frequency of occurrences exceeds said first constant;
(f) comparing the frequency of occurrences in the second highest amplitude range with a predetermined second constant;
(g) storing the present value of the amplifier gain and terminating said method if said frequency of occurrences exceeds said second constant;
(h) raising the present value of the amplifier gain by a predetermined second factor if said frequency of occurrences does not exceed said second constant;
(i) forming a sum of the frequencies of occurrences of said second and a third highest amplitude ranges;
(j) comparing said sum of frequencies with said second constant;
(k) storing the present value of the amplifier gain and terminating said method if said sum exceeds said second constant;
(l) raising the present value of the amplifier gain by said predetermined second factor if said sum does not exceed said second constant;
(m) adding the frequency of occurrences in a next highest amplitude range to said sum; and
(n) repeating steps (j)–(m) until the sum exceeds said second constant.

4,543,538

COMPLEMENTARY OUTPUT AMPLIFIER WITH AN INPUT FOR OFFSETTING VOLTAGES

Richard D. Fay, Jackson, Mo., assignor to Lenco, Inc., Jackson, Mo.

Filed Jul. 16, 1984, Ser. No. 631,190
Int. Cl.[4] H03F *3/45*
U.S. Cl. 330—260 **11 Claims**



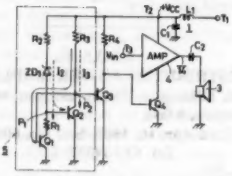
1. An amplifier circuit having first and second inputs, first and second outputs, a first differential pair of active elements connected between the first and second inputs, a first negative feedback circuit connected between the second output and a first active element of the first differential pair, a second negative feedback circuit connected between the first output and a second active element of the first differential pair, first and second output stages associated respectively with the first and second outputs and respectively connected to said active elements of said first differential pair, a voltage divider circuit connected between the first and second outputs, said voltage divider having an intermediate connection location, a reference circuit including a second differential pair of active elements, a reference input port connected to one of the active elements of said second pair, said intermediate connection location of the voltage divider circuit connected to the other active element of said second pair, other active elements respectively connected to the active elements of the first differential pair and to the active elements of the reference circuit, said other active elements responding to variations occurring across the reference circuit and operating in conjunction with the first and second output stages to cancel in phase signals and noise appearing on the first and second outputs, and circuit means operatively connected to the active elements of said first differential pair, to said other active elements and to the reference circuit active elements to maintain them in their operation conditions.

4,543,539

AMPLIFIER

Kunio Seki, Tokyo, and Ritsuji Takeshita, Takasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 523,970
Claims priority, application Japan, Sep. 24, 1982, 57-164836
Int. Cl.[4] H03F *3/04*
U.S. Cl. 330—297 **14 Claims**



1. An amplifier comprising:
(a) an amplifier circuit including means for amplifying an input signal while a power supply voltage is applied thereto from a power supply voltage terminal;
(b) power supply voltage detector means connected to said power supply voltage terminal and having a hysteresis detecting characteristic as to a first threshold level and a second threshold level, wherein said first threshold level is at a higher level than said second threshold level; and
(c) means connected to said power supply voltage detector means and said amplifier circuit for controlling said amplifying means to amplify said input signal, wherein the amplifying operation of said amplifying means is started by said control means when said power supply voltage becomes higher than said first threshold level during a rise of said power supply voltage, and wherein said amplifying operation of said amplifying means is stopped by said control means when said power supply voltage becomes lower than said second threshold level during a fall of said power supply voltage.

4,543,540

PHASE LOCKED LOOP WITH LIMITED PHASE CORRECTION WHEN IN LOCKED CONDITION

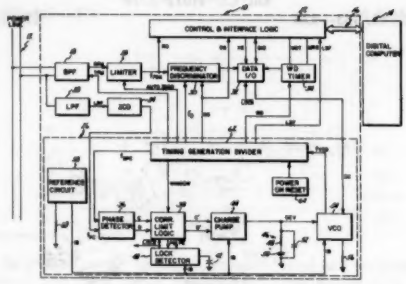
William J. Linder, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 25, 1983, Ser. No. 487,941
Int. Cl.[4] H03L *7/00*
U.S. Cl. 331—1 A **13 Claims**

1. A phase locked loop comprising:
phase detector means for providing a phase detector output which is a function of a phase difference between selected signal transitions of a periodic input signal and a periodic loop synthesized signal;
oscillator means for providing a periodic oscillator output signal having a frequency which is a function of an oscillator control signal;
means for deriving the loop synthesized signal from the oscillator output signal;

means for deriving a periodic window signal from the oscillator output signal, the window signal having a pulse duration which begins before and ends after the selected signal transition of the input signal is anticipated;

lock detector means for providing a lock detect signal indicative of whether the loop is in lock; and



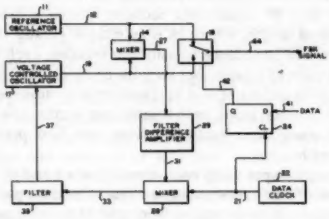
means for providing the oscillator control signal as a function of the phase detector output, the window signal, and the lock detect signal, wherein changes to the oscillator control signal based upon the phase detector output are limited by the window signal when the lock detect signal indicates that the loop is in lock, and are not limited by the window signal when the lock detect signal indicates that the loop is out of lock.

4,543,541

FSK MODULATION USING SWITCHED OUTPUTS OF TWO OSCILLATORS

Jerry J. Norton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 16, 1984, Ser. No. 600,755
Int. Cl.⁴ H04L *27/12*
U.S. Cl. 332—16 R **8 Claims**



1. Apparatus comprising:

a reference oscillator, wherein said reference oscillator provides a first signal having a first frequency;

a voltage controlled oscillator, wherein said voltage controlled oscillator provides a second signal having a second frequency which is different from said first frequency;

means for switching between said first signal and said second signal to establish a FSK modulated signal;

means for controlling said means for switching in response to the state of a digital data signal and in response to a data clock;

means for establishing a difference signal which has a frequency equal to the difference between the frequency of said first signal and the frequency of said second signal; and

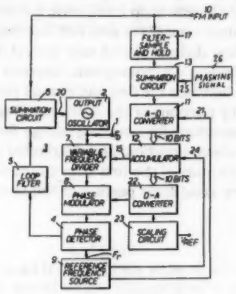
means for controlling said voltage controlled oscillator so that said difference signal is in phase with said data clock.

4,543,542

PHASE LOCKED LOOP FREQUENCY AND PHASE MODULATORS

David P. Owen, Dunstable, England, assignor to Marconi Instruments Limited, St. Albans, England

Filed May 3, 1984, Ser. No. 607,397
Claims priority, application United Kingdom, May 17, 1983, 8313616; Apr. 18, 1984, 8410060
Int. Cl.⁴ H03C *3/09*; H03L *7/18*
U.S. Cl. 332—18 **13 Claims**



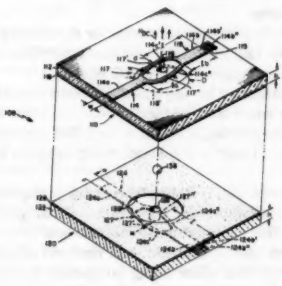
1. A modulation signal source including a phase locked loop having a variable frequency oscillator; a variable frequency divider and a dual input phase detector, the frequency of said oscillator being dependent upon the value of a control signal derived from said phase detector; a source of reference frequency signals, the phase detector being operative to compare the frequency of a signal received from said oscillator via said divider with the frequency of a signal derived from the source of reference frequency signals; means for receiving a modulation signal and for utilising it to adjust said control signal; digital means responsive to said modulation signal to vary the divisor value of said frequency divider; and means for also feeding a masking signal to said digital means so as to reduce the effect of digital quantisation noise on the frequency characteristic of the phase locked loop.

4,543,543

MAGNETICALLY TUNED RESONANT CIRCUIT

Ronald E. Blight, Framingham, and Ernst F. R. A. Schloemann, Weston, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 3, 1982, Ser. No. 446,531
Int. Cl.⁴ H01P *1/32, 7/08*
U.S. Cl. 333—24.1 **31 Claims**



1. In combination:

a first dielectric;

a first strip conductor disposed on a first surface of the dielectric, said first strip conductor having a first pair of spaced strip conductor portions connected to a wide strip conductor portion, with an input signal fed to said wide strip conductor portion being distributed to the pair of spaced portions;

a second dielectric;

a second strip conductor disposed on a first surface of said second dielectric, said second strip conductor having a second pair of spaced strip conductor portions connected to a second wide strip conductor portion;

a ground plane conductor disposed between second surfaces of said first dielectric, and said second dielectric; and

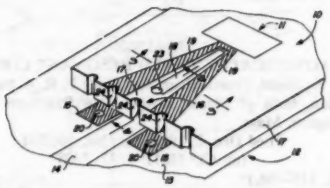
means, including a gyromagnetic resonant body disposed in a region between the first and second pairs of spaced strip conductor portions of the corresponding first and second strip conductors, for coupling energy fed to the first wide strip conductor portion, and distributed to the first pair of spaced portions of the first strip conductor, to the second wide strip conductor portion of the second strip conductor.

4,543,544

LCC CO-PLANAR LEAD FRAME SEMICONDUCTOR IC PACKAGE

Bernhard A. Ziegner, Westford, Mass., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1984, Ser. No. 568,157
Int. Cl.[4] H01P *5/08*
U.S. Cl. 333—34 **7 Claims**



1. A transmission device for coupling an IC device to a PC board comprising:

a first controlled impedance means for controlling the impedance from said PC board, said first controlled impedance means being coupled to said PC board;

a tapered conductor having a first end and a second end, said first end being wider than said second end, said first end of said tapered conductor being coupled to said first controlled impedance means and said second end being coupled to said IC device; and

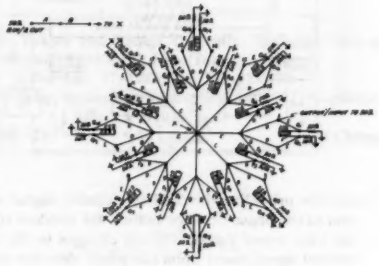
a tapered co-planar ground plane being juxtaposed to said tapered conductor, said tapered co-planar ground plane having a first end and a second end said first end being wider than said second end, said first end of said tapered co-planar ground plane being juxtaposed to said first end of said tapered conductor and said second end of said tapered co-planar ground plane being juxtaposed to said second end of said tapered conductor.

4,543,545

MICROWAVE RADIO FREQUENCY POWER DIVIDER/COMBINER

Richard W. Craine, Nutley, and Joseph P. Drabick, Hasbrouck Heights, both of N.J., assignors to ITT Corporation, New York, N.Y.

Filed Mar. 15, 1984, Ser. No. 589,794
Int. Cl.[4] H01P *5/12*
U.S. Cl. 333—128 **29 Claims**



1. A microwave radio frequency power divider/combiner comprising:

a signal input/output matching network coupled between a signal input/output and a central point of said divider/-combiner;

M impedance transformer sections connected in parallel to said central point and radiating outwardly therefrom, each of said M transformer sections having a first predetermined length, where M is an integer greater than one;

M pairs of impedance transformer sections, each pair of said M pairs of transformer sections being coupled to an end of a different one of said M transformer sections remote from said central point, each transformer section of said M pairs of transformer sections having said first predetermined length;

N output/input ports each coupled to an end of a different one of said transformer sections of said M pairs of transformer sections remote from said M transformer sections, each of said N ports being matched to a given impedance, where N is equal to 2M;

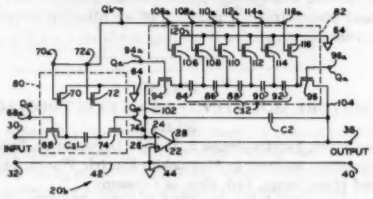
2N isolation networks including 2N termination impedances each having one terminal thereof connected to ground, the other terminal of each of a given N of said 2N termination impedances being connected by a different one of first N impedance transformer sections to said N ports, and the other terminal of each of the remaining N of said 2N termination impedances being connected by a different one of second N impedance transformer sections to said end of said M transformer sections remote from said central point, each of said first and second N transformer sections having said first predetermined length; and

N transmission line sections each having a second predetermined length different than said first predetermined length, each of said N transmission line sections interconnecting different adjacent ones of said 2N isolation networks in pairs.

4,543,546
SWITCHED CAPACITOR CIRCUIT WITH MINIMIZED SWITCHED CAPACITANCE

Peruvamba R. Hariharan, Fort Wayne, Ind., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Apr. 20, 1983, Ser. No. 486,664
Int. Cl.⁴ H03H *11/12*
U.S. Cl. 333—173 **14 Claims**



1. In a filter circuit having an input terminal and an output terminal, said filter circuit having amplifying means with an input and an output terminal, a feedback circuit coupled between the amplifying means input and output terminals, said filter circuit output terminal being coupled to said amplifying means output terminal, said filter circuit comprising circuit components integrated on a monolithic or film stratum having a practical minimum unit of capacitance defined as a MUC, that improvement comprising:

a first switched capacitor circuit having first and second end terminals and having a first terminal capacity therebetween, with said first and second end terminals being coupled to said amplifying means input and output terminals, respectively;

a capacitor circuit having first and second terminals coupled to said amplifying means input and output terminals, respectively, and having a second terminal capacity, more than said first terminal capacity, whereby a first ratio "R1" of said second terminal capacity to said first terminal capacity is greater than one;

said first switched capacitor circuit comprising a number "N" of series connected capacitors, said number N being greater than one and less than said ratio R1; each of said series connected capacitors having a first connection point at one plate of said each capacitor and a second connection point at the other plate of said each capacitor; said series connected capacitors including a first and a last capacitor and the remaining capacitors of said series connected capacitors being connected in series between said first and last capacitors at said connection points; said first connection point of said first capacitor being coupled to said first end terminal of said first switched capacitor circuit and said second connection point of said last capacitor being coupled to said second end terminal of said first switched capacitor circuit; said first connection points of said remaining capacitors and said last capacitor being connected to respective second connection points of respective next adjacent capacitors at respective junctions; parasitic capacitances being associated with said series connected capacitors;

discharge circuit means for providing capacitor plate discharge to a reference potential;

clock phase means for providing in alternation first and second clock phases at a predetermined frequency;

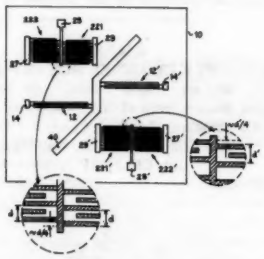
first and second switching means controlled by said clock phase means and connected to said first and second end terminals respectively of said first switched capacitor circuit for coupling said first and second end terminals to the amplifying means input and output terminals respectively during said first clock phase and uncoupling said first and second end terminals from the amplifying means input and output terminals respectively during said second clock phase;

a plurality of third switching means controlled by said clock phase means, a said third switching means connected to each said first and second end terminals and to said junctions in said first switched capacitor circuit for coupling each plate of each of said plurality of series connected capacitors to said discharge circuit means for discharging each plate of each of said number N of capacitors in said first switched capacitor circuit at said predetermined frequency to said discharge circuit means during said second clock phase to reduce the effects of parasitic capacities associated with said first switched capacitor circuit and for uncoupling each plate of each of said plurality of series connected capacitors from said discharge circuit means during said first clock phase.

4,543,547
DEMODULATION FILTER FOR A SIGNAL MODULATED IN BINARY FREQUENCY MANNER

Jean-Edgar Picquendar, Saint Remy les Chevreuse; Jeannine Henaff, Clamart, and Michel Feldmann, Paris, all of France, assignors to L'Etat Francais, Issy les Moulineaux, France

Filed Apr. 15, 1983, Ser. No. 485,282
Claims priority, application France, Apr. 16, 1982, 82 06598
Int. Cl.⁴ H03H *9/145, 9/64*
U.S. Cl. 333—193 **7 Claims**



1. A filter for the demodulation of a signal modulated in frequency according to a binary code with two frequencies F_a and F_b, F_b being higher than F_a comprising two acoustic surface wave filtering units having interdigitated or split-finger electrode transducers deposited on the surface of a piezoelectric crystal, means for driving both units with analog signals to be demodulated and having a finite pulse response, whose duration is substantially equal to $0.5/(F_b-F_a)$, the first filtering unit having a frequency response curve with a very high relative attenuation at frequency F_b and a relatively low attenuation at frequency F_a, the second filtering unit having a frequency response curve with a relatively high attenuation at frequency F_a and a relatively low attenuation at frequency F_b, and associated with each of the two filtering units a transmitting transducer and two juxtaposed receiving transducers having interdigitated electrodes with the same spacing, one of the two receiving transducers having its electrodes displaced with respect to those of the other in the direction perpendicular to the electrodes, the displacement having a value of approximately $v/4F_a$ for the first filtering unit and $v/4F_b$ for the second filtering unit, in which v is the propagation rate of the surface waves.

4,543,548

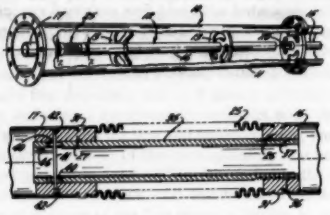
COAXIAL TRANSMISSION LINE HAVING AN EXPANDABLE AND CONTRACTIBLE BELLOWS

William W. Seal, Covina, and Laddie A. Basa, Claremont, both of Calif., assignors to Andrew Corporation, Orland Park, Ill.

Filed Apr. 2, 1984, Ser. No. 595,238

Int. Cl.⁴ H01P *1/30, 3/06;* **F16L** *51/02*

U.S. Cl. 333—243 **7 Claims**



1. A conductor comprising first and second elongated conductor sections made of conductive material and spaced axially from one another, an expandable and contractible bellows made of conductive material extending between and joined to adjacent ends of said conductor sections to permit relative expansion and contraction of said conductor sections, an axially rigid connector member disposed within said bellows, said connector member extending between and being joined to the ends of said conductor sections by means of a torsionally and laterally rigid connection protecting said bellows from torsional twisting and lateral deflection, and means permitting said member to float axially relative to one of said connector sections but only through a limited range thereby to limit expansion and compression of said bellows to said range.

4,543,549

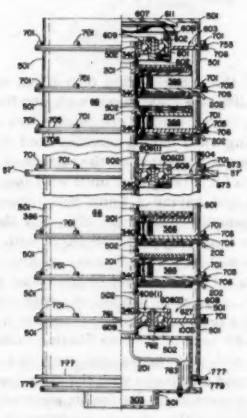
MULTIPLE CHANNEL ROTARY JOINT

Leonard A. Meltzer, Little Neck, and Seymour Sutkin, Huntington Station, both of N.Y., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 3, 1984, Ser. No. 576,848

Int. Cl.⁴ H01P *1/06*

U.S. Cl. 333—256 **5 Claims**



1. A rotary joint arrangement for transferring electromagnetic power in a plurality of channels between stationary and rotatable radar structures, said rotary joint arrangement comprising a cooperative matrix of bearing and power transfer modules each including a stator and rotor portion including respective stationary and rotatable coaxial power leads, and each of said power transfer modules including rotatable means for rotatingly coupling a single channel of electromagnetic power between said respective stationary and rotatable coaxial power leads, said rotary joint arrangement including at least a pair of bearing modules, and at least one of said power transfer modules intervening in position between said pair of bearing modules, whereby said bearing and power transfer modules are interspersed with respect to one another and the rotor portions of said power transfer modules being rotatably supported by the rotor portions of said bearing modules.

4,543,550

ARMATURE MOUNTING FOR AN ELECTROMAGNETIC RELAY

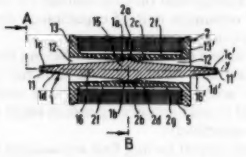
Hans Sauer, Fichtenstrasse 5, D-8024 Deisenhofen, Fed. Rep. of Germany, assignor to Matsushita Electric Works, Ltd., Japan and Hans Sauer, Fed. Rep. of Germany

Filed Jan. 30, 1984, Ser. No. 574,822

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303666

Int. Cl.⁴ H01H *51/22*

U.S. Cl. 335—78 **11 Claims**



1. An electromagnetic relay comprising:

a one-part bobbin carrying a coil and having a central bore extending along a longitudinal axis of the bobbin, and including a pair of opposite, elastic walls, with a pair of ribs projecting from said elastic walls towards each other,

armature means disposed in said bore, and

a contact system operated by said armature means, said armature means having a pair of first curved bearing surfaces, and said ribs providing a pair of second curved bearing surfaces cooperating with said first bearing surfaces to support said armature means for pivotal movement about a transverse axis,

said elastic walls allowing said armature means to be inserted in said bore with loose-play snap-engagement between said first and second pairs of bearing surfaces.

4,543,551

APPARATUS FOR ORIENTING MAGNETIC PARTICLES IN RECORDING MEDIA

Christian C. Petersen, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 2, 1984, Ser. No. 627,055

Int. Cl.⁴ H01F *7/02, 7/20*

U.S. Cl. 335—284 **6 Claims**

1. Apparatus for use in orienting particles which are orientable under the influence of a magnetic field comprising:

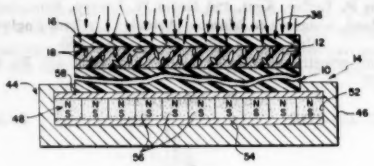
a non-magnetic housing assembly defining a storage area;

a plurality of discrete permanent magnets, said magnets being stored in said area in juxtaposed and predetermined relationship to one another, wherein each of said magnets has one of its poles facing away from said assembly and in the same general direction and the opposite pole of each of said magnets facing towards said assembly;

means disposed in said assembly for facilitating magnetic attraction between it and said opposite poles, whereby the

assembly and retention of said magnets in and to said storage area are enhanced; and

said housing assembly including a cover assembly which is in overlying and contacting relationship to each of said



one poles so as to restrain said magnets in said predetermined relationship as well as shield them, said cover assembly being made of a material which substantially does not inhibit the natural extension of the lines of flux of the fields of said magnets.

4,543,552

TRANSFORMER, MORE ESPECIALLY A VOLTAGE DROPPING TRANSFORMER FOR AN ELECTRIC WELDING MACHINE

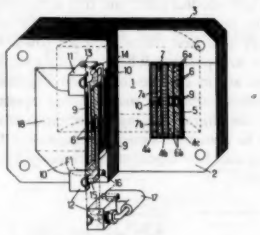
Jean-Paul Fantou, Chateau du Loir, France, assignor to ARO, Chilly Mazarin, France

Filed Jun. 8, 1983, Ser. No. 502,235

Claims priority, application France, Jun. 8, 1982, 82 09967

Int. Cl.⁴ H01F *27/10*

U.S. Cl. 336—60 **10 Claims**



1. A transformer comprising a primary circuit including a primary winding and a secondary circuit including a secondary winding, a first plurality of electrically active cooling turns forming at least part of the secondary winding of the secondary circuit, and the number of turns of said first plurality being dependent upon the transformation ratio of the transformer, said transformer further comprising a second plurality of electrically inactive cooling turns having a cooling liquid circulating therein provided in the winding of at least one of said circuits in thermal contact with that winding for serving solely a cooling function and not forming a part of said secondary circuit, the number of turns of said second plurality depending upon the cooling to be provided, means for enabling circulation of a cooling liquid through said second plurality of cooling turns, and at least a portion of said electrically active turns and said electrically inactive turns dividing the winding of the primary circuit into separate sections.

4,543,553

CHIP-TYPE INDUCTOR

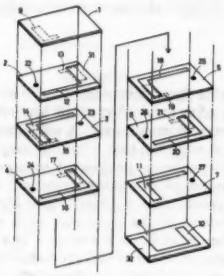
Harufumi Mandai, Takatsuki, and Kunisaburo Tomono, Kyoto, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed May 16, 1984, Ser. No. 610,682

Claims priority, application Japan, May 18, 1983, 58-75679[U]

Int. Cl.⁴ H01F *17/04*

U.S. Cl. 336—83 **10 Claims**



1. A chip-type inductor comprising a laminated structure of n magnetic layers, n being a natural number greater than or equal to 4, where linear conductive patterns extending between the magnetic layers are connected successively in a form similar to a coil so as to produce an inductance component, characterized in that:

of the n magnetic layers, the uppermost first magnetic layer is provided with a conductive pattern formed on the lower surface thereof and the lowermost nth magnetic layer and the adjacent n−1th magnetic layer are provided with respective conductive patterns on the upper surfaces thereof;

each of the second to the n−2th magnetic layers is provided with a respective pair of conductive patterns, one of the pair being located on the upper surface thereof, the other of the pair being located on the lower surface thereof, each of said second to n=2th magnetic layers insulating its respective pair of conductive patterns from one another;

the conductive pattern formed on the lower surface of the first to the n−2th magnetic layers being in direct contact with the conductive pattern formed on the upper surface of the second to n−1th magnetic layers, respectively;

in each of the second to the n−1th magnetic layers, a respective, electrically non-conductive, through-hole is formed in a region where no conductive pattern is formed in the layer; the conductive pattern formed on the upper surface of the third through nth magnetic layer being connected to the conductive pattern formed on the lower surface of the first through n−2th magnetic layers, respectively, via the through-hole formed in the second through n−1th magnetic layers, respectively; and

lead out electrodes are connected to the conductive layers formed on the first and nth electrodes, respectively.

4,543,554

SYSTEM FOR THE ELIMINATION OF RADIO INTERFERENCE AND METHOD FOR ITS MANUFACTURE

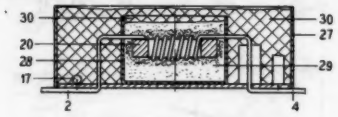
Thomas Muellenheim, Kahl, and Hans-Joachim Nilius, Seligenstadt, both of Fed. Rep. of Germany, assignors to Vacuumschmelze GmbH, Fed. Rep. of Germany

Filed Jan. 26, 1982, Ser. No. 342,850

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1981, 3104270

Int. Cl.⁴ H01F *15/02*

U.S. Cl. 336—83 **4 Claims**



1. A system for the elimination of radio noise, comprising: a choke formed of a toroidal core of low-retentivity material onto which two windings on which a line current travelling in opposite directions in the two windings may be impressed are wound; the choke being positioned in a container within a casting compound of insulating material; and a powder of magnetically conductive material embedded in the casting compound situated in the container in a proximity of and surrounding the choke in such a manner and distribution so as to establish a specific desired leakage inductance for the choke so as to attenuate interference currents which are symmetrical to ground and travelling in opposite directions like the line current by providing the specific leakage inductance.

4,543,555

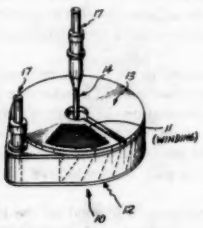
COIL ASSEMBLY FOR HOT MELT INDUCTION HEATER APPARATUS

Arthur W. McDermott, Maple Valley, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 295,207, Aug. 24, 1981, Pat. No. 4,481,709, which is a continuation-in-part of Ser. No. 260,970, May 6, 1981, Pat. No. 4,420,876. This application Sep. 12, 1983, Ser. No. 530,924

Int. Cl.⁴ H01F *27/30*

U.S. Cl. 336—206 **4 Claims**



1. A coil assembly for use in induction heating apparatus comprising a plurality of windings of a flat shaped electrical conductor, said electrical conductor wrapped with a polyimide tape, said polyimide tape having two major side surfaces, each of said side surfaces having a coating of fluoroplastic material, and, including a fluoroplastic face sheet supported by a major surface of said coil assembly and providing a non-stick surface for release of hot melt adhesive material; said coil assembly further including a heat sink disposed on a major surface of said coil assembly opposite said major surface supporting said fluoroplastic face sheet; and,

wherein the stack of elements comprising face sheet (12), a plurality of coated polyimide sheets (20) and a coil body (10), when fixtured (FIG. 8), provides a clamping pressure to insure fusing.

4,543,556

INDUCTIVE COUPLER SYSTEMS

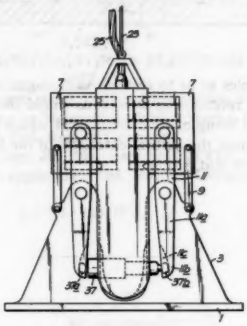
Douglas R. Taylor, Kent, and David W. Pearce, Avon, both of England, assignors to Marconi Avionics Limited, England

Filed Jul. 24, 1984, Ser. No. 633,968

Claims priority, application United Kingdom, Jul. 29, 1983, 8320510

Int. Cl.⁴ H01F *27/26*

U.S. Cl. 336—210 **6 Claims**



1. An inductive coupler system comprising: a first part in which is defined a socket region, said first part supporting a first frame member which carries a first magnetic half-core constituting one half of an inductive coupler; a second part comprising a plug member adapted to be received by the socket region, said second part incorporating a second frame member which carries a second magnetic half-core constituting the other half of the inductive coupler; first actuation means connected to said first part; and second actuation means connected to said second part, said first actuation means being operable by the insertion of said plug member into said socket region to move said first frame member towards said second frame member to a position where a mating surface of each of said half-cores are in surface-to-surface alignment with each other, said second actuation means being operative in a first sense to drive the aligned mating surface into intimate contact, and operable in a second sense to cause said first actuation means to move said first frame member away from said second frame member.

4,543,557

PANEL MOUNTABLE FUSE HOLDER

Rudolf K. Schaefer, Des Plaines, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

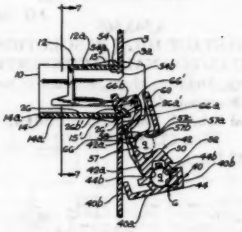
Filed Nov. 30, 1983, Ser. No. 556,630

Int. Cl.⁴ H01R *13/62, 3/00*

U.S. Cl. 337—196 **20 Claims**

1. In a fuse holder comprising a main fuse holder body adapted to be mounted within an opening in a vertical panel and having a forwardly facing fuse and fuse carrier-receiving opening communicating with at least one passageway therein having a pair of fuse terminal-receiving clips aligned parallel to and located directly behind said fuse and fuse carrier-receiving opening, and a fuse carrier body insertable together with a fuse carried thereby into said passageway through said fuse and fuse carrier-receiving opening, the carrier having fuse receiving and retaining means for releasably holding an active fuse with spaced exposed terminals aligned parallel to said opening and positioned to engage with said fuse terminal-receiving clips when the carrier body is fully inserted within the fuse

holder body, and said fuse holder body and fuse carrier body including complimentary guiding means for guiding said fuse carrier body for horizontal reciprocating movement within and into and out of said fuse holder body passageway through said fuse and fuse carrier-receiving opening while said fuse holder body is mounted in said panel opening, the improvement wherein said fuse holder body includes means in said fuse holder body passageway adjacent the front end thereof for preventing the complete separation of said fuse carrier body from said fuse holder body passageway when the fuse carrier



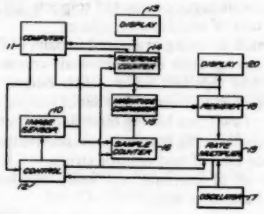
body is pulled to the front of the fuse holder body, said fuse carrier body having pivot-forming means horizontally movable in the fuse holder body passageway with the rest of said carrier and pivotally engaging with the fuse holder body when said fuse carrier body is pulled into its forwardmost position where the carrier body can be pivoted into a position where it hangs downwardly from said fuse holder body while said pivot-forming means on the carrier body remains on said fuse holder body, said fuse-receiving and retaining means being then exposed to enable said active fuse to be removed from said fuse carrier and replaced by another fuse.

4,543,558

METHOD AND APPARATUS FOR CONVERTING RADIANT ENERGY LEVELS TO DIGITAL DATA

James A. White, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 14, 1983, Ser. No. 475,090
Int. Cl.⁴ H03K *13/08*
U.S. Cl. 340—347 AD **12 Claims**



1. A method for converting radiant energy levels to digital data, comprising the steps of:

(a) providing an image sensor having at least one row of sensor elements each including a light sensitive capacitor and an access switch and which changes state and produces a corresponding binary output signal when a predetermined charge threshold is exceeded by the capacitor whose charge is a function of intensity and period of an illumination;

(b) calibrating said row of elements by illuminating same with a reference light source and sensing at a first frequency (F) such that approximately one-half of the elements change state and counting the digital output signals corresponding to the changes of state to obtain a first number (B);

(c) illuminating said row with an unknown light source which has a lower radiant energy level than that of said reference light source, sensing at a frequency F/2 and counting the digital output signals corresponding to the changes of state to obtain a second number (A);

(d) comparing A and B and producing a digital "1" signal when $A > B$ and a digital "0" when $A < B$ corresponding to digital data bit N_1; and

(e) repeating steps (c) and (d) for each successive bit N_2, N_3 . . . N_k of digital data at successive sensing frequencies in accordance with

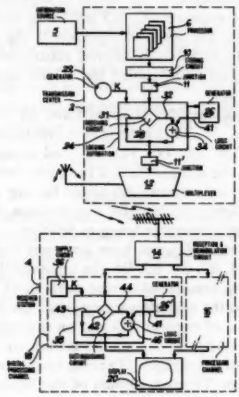
$$\frac{F \times N_1}{2^1} + \frac{F \times N_2}{2^2} + \frac{F \times N_3}{2^3} + \ldots \frac{F \times N_k}{2^k}.$$

4,543,559

GENERATOR OF ENCODING OR DECODING 8-BIT BYTES WHICH CAN BE USED IN A VIDEO SYSTEM

Louis C. Guillou, 16 rue de l'Ise BourgbarréF-35230 St. Erblon; Raymond Le Bris, 7 Allée de Lanester, and Ambroise Le Rest, 18 rue de Brest, both of, 35000 Rennes, all of France

Filed Jan. 10, 1983, Ser. No. 456,749
Claims priority, application France, Jan. 11, 1982, 82 00288
Int. Cl.⁴ H04L *3/00*
U.S. Cl. 340—347 DD **1 Claim**



1. An encoding or decoding byte generator, wherein it comprises:

(a) 8 input accesses, respectively B_8, B_7, . . . B_1 with the highest significance level at the heading;

(b) a first subassembly R, constituted by 5 exclusive OR logic gates (RP_5 to RP_1) with two inputs and an output, 7 registers (RA, RB, RC, RD, RE, RF, RG) and an adder (RAd) modulo 31, all these registers and adder having five bits and having parallel inputs-outputs, the adder having two input groups (RAd_1, RAd_2), the connections between these registers and the adder being as follows:

the exclusive OR gates have an input connected to the five least significant accesses B_1 to B_5, the first register RD has its inputs connected to the outputs of the gates and its outputs connected on the one hand to the inputs of register RE and on the other to the inputs of a group (RAd_2) of the adder, the outputs of register RE are connected to the inputs of register RF, whose outputs are connected to the inputs of register RG, the outputs of this register, after circular shift by one rank, towards the higher significance levels, are connected to the

inputs of the other group of the adder (RAd_1), the latter having its outputs connected to the inputs of register RA, whose outputs are connected to the inputs of register RB, the outputs of the latter being connected to the inputs of register RC, and the outputs of said register being relooped on to the other inputs of the exclusive OR gates, said first subassembly R also having a 5-bit, exclusive OR logic circuit (R_{10}) having a first group of inputs (12) connected to the outputs of register RE and a second group of inputs (14) connected to the outputs of register RA, said circuit having a 5-bit output constituting output (16) of the first subassembly;

(c) a second subassembly S constituted by 7 exclusive OR gates ($SP_7, \ldots SP_1$) with two inputs and an output, 7 registers (SA, SB, SC, SD, SE, SF, SG) and an adder (SAd) modulo 127, all these registers and the adder having 7 bits and parallel inputs-outputs, the adder having two groups of inputs (SAd_1, SAd_2) the connections between these registers and the adder being as follows:

the exclusive OR gates S_7 to S_4 have an input connected to accesses B_4, B_3, B_2, B_1 and gates S_3 to S_1 to accesses B_8, B_7, B_6, the first register SF has its inputs connected to the outputs of the preceding gates, the outputs of register SF are connected on the one hand to the inputs of register SG and on the other to the inputs (SAd_2) of one of the groups of the adder, register SG having its outputs connected, after circular shift by one rank towards the highest significance levels, to the inputs of the other group (SAd_1) of the adder, the outputs of the adder being connected to the inputs of register SB, then connected to registers SC, SD and SF in series, the outputs of register SE being relooped on to the other inputs of gates SP_7 to SP_1 said second subassembly S having a 5-bit output (20) forming the 5 least significant bits of register SA;

(d) a third subassembly T constituted by 5 exclusive OR gates ($TP_5, \ldots TP_1$) having two inputs and an output, 5 registers (TA, TB, TC, TD, TE) and an adder modulo 31 (TAd), all these registers and the adder having 5 bits and parallel inputs-outputs, the adder having two groups of inputs (TAd_1, TAd_2), the connections between these registers and the adder being as follows:

the exclusive OR gates have an input connected to accesses B8, B7, B6, B5, B4, the inputs of the first register RC being connected to the outputs of the preceding gates and the outputs are connected on the one hand to the inputs of register TD and on the other hand to the inputs (TAd_2) of one of the groups of the adder, the outputs of the register TD being connected to the inputs of register TE, the outputs of the register being connected to the input (TAd_1) of the other group of the adder, the outputs of the latter being connected to the inputs of register TA, the outputs of this register being connected to the inputs of register TB, whose outputs are relooped on to the other inputs of gates $T_5, \ldots T_1$, said third subassembly T also having a 5-bit, exclusive OR logic circuit (T_{10}), incorporating a first group of inputs (22) connected to the outputs of register TD and a second group of inputs (24) connected to the outputs of register TA, said logic circuit having a 5-bit output constituting the output (26) of the third subassembly T;

(e) a first 5-bit, AND-type logic circuit (30) having two inputs (31, 32) and an output (33), whereby one of the inputs (31) is connected to output (16) of the first subassembly R and the other reversed input (32) is connected to output (20) of the second subassembly S;

(f) a second 5-bit, AND-type logic circuit (40) having two inputs (41, 42) and an output (43) one of the inputs (41) being connected to ouput (26) of the third subassembly T and the other to output (20) of the second subassembly S;

(g) a 5-bit, logic OR circuit (50), having two inputs (51, 52) and an output (53), one of the inputs (51) being connected to the output (33) of the first exclusive OR circuit (R_{10}) and the other (52) to the output of the second exclusive OR circuit (T_{10});

(h) a modulo 2 adder (60) having a 5-bit input (61) connected to the output (53) of the logic OR circuit (50) and a one-bit output (62);

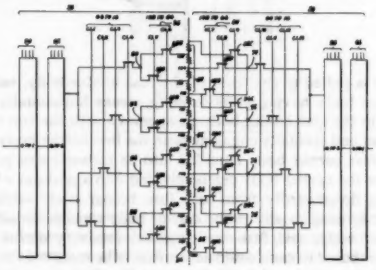
(i) 8 output accesses, respectively $c_8, c_7 \ldots c_1$ with the highest significance at the heading, access c_8 being connected to output (62) of adder (60), accesses c_6 and c_7 being permanently maintained at logic state 0 and accesses $c_5, c_4, \ldots c_1$ being connected to the 5-bit output (53) of logic OR circuit (50).

4,543,560

TWO-STAGE HIGH RESOLUTION DIGITAL-TO-ANALOG CONVERTER

Peter R. Holloway, Andover, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Feb. 17, 1984, Ser. No. 581,133
Int. Cl.[4] H03K *13/02*
U.S. Cl. 340—347 DA **13 Claims**



1. A two-stage cascaded digital-to-analog converter wherein the first of said stages comprises a series-connected string of resistors energized by a source of voltage so that the resistor taps present progressively differing voltage levels;

an improved switch arrangement for selecting pairs of adjacent taps in accordance with higher-order code bits, thereby to develop segment voltages to be directed to said second converter stage for interpolation in accordance with lower-order code bits, said switch arrangement comprising:

a first set of switches having input and output terminals, said input terminals being connected respectively to a first set of alternate taps of said resistor string;

said first switch set being organized in pairs of first and second switches having their input terminals connected to successive alternate taps and having their output terminals connected together to form a first set of output nodes;

a second set of switches having input and output terminals, said input terminals being connected respectively to a second set of alternate taps of said resistor string;

said second set of alternate taps being interleaved with said first set of alternate taps;

said second switch set being organized in pairs of first and second switches having their input terminals connected to successive alternate taps and having their output terminals connected together to form a second set of output nodes;

a third set of switches having input and output terminals, each of said third set of switches being associated with a corresponding one of said pairs of switches of said second set of switches;

each of said output terminals of said third set of switches being connected respectively to the output node of its corresponding pair of switches of said second set;

the input terminal of each of said third set of switches being connected to the input terminal of the adjacent one of the next successive pair of said second set of switches; and

switch activating means for controlling said switches to select

any pair of adjacent taps in accordance with a set of code bits.

4,543,561

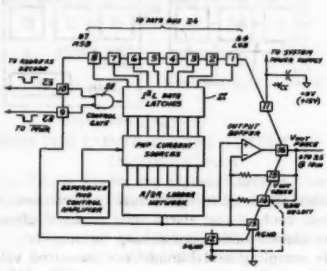
SINGLE-SUPPLY IC DIGITAL-TO-ANALOG CONVERTER FOR USE WITH MICROPROCESSORS

Peter R. Holloway, Andover, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Continuation of Ser. No. 120,892, Feb. 12, 1980,. This application Mar. 22, 1982, Ser. No. 360,482

Int. Cl.[4] H03K *13/02*

U.S. Cl. 340—347 DA **21 Claims**



1. In an IC digital-to-analog converter for use with a single supply voltage and operable to produce an output voltage referred to ground potential:

a plurality of current sources to be activated in a pattern corresponding to an applied digital signal;

means coupled to said current sources to produce an analog signal corresponding to the pattern of activation of said sources;

a buffer amplifier having an input circuit receiving said analog signal and an output circuit for producing an output voltage corresponding to said analog signal;

said output circuit including a drive transistor including means to sense the onset of saturation in the transistor and to produce a corresponding saturation signal; and

feedback means coupled to said sensing means and responsive to said saturation signal for reducing the level of the signal applied to said drive transistor as saturation begins to occur and developing an output voltage at levels near ground potential when said analog signal is near zero.

4,543,562

MECHANICALLY-ACTUATED TOUCHBARS AND TOUCHPLATES USING MULTIPLE-CLOSURE SWITCHES

Nils O. Ny, Levittown, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 23, 1982, Ser. No. 410,547

Int. Cl.[3] G08C *9/00*

U.S. Cl. 340—365 S **21 Claims**

2. In combination:

a touchbar with first and second ends;

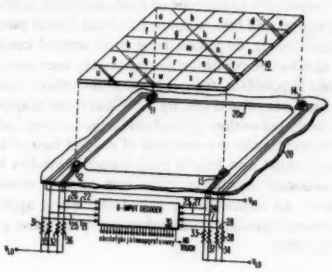
a supporting surface;

first and second similar switch means arranged to respond to force between respectively the first and second ends of said touchbar and said supporting surface, each of said first and second switch means having a respective first set of contacts changing from a normal condition of conduction or non-conduction to the alternative condition at a relatively small threshold force, and each having a respective second set of contacts changing from a normal condition of conduction or non-conduction to the alternative condition at a relatively large threshold force;

means responding to said normal and alternative conditions of the first set of contacts of said first switch means for generating first and second logic conditions, respectively, on a first bus;

means responding to said normal and alternative conditions of the first set of contacts of said second switch means for generating first and second logic conditions, respectively, on a second bus;

means responding to said normal and alternative conditions of the second set of contacts of said first switch means for generating first and second logic conditions, respectively, on a third bus;



means responding to said normal and alternative conditions of the second set of contacts of said second switch means for generating first and second logic conditions, respectively, on a fourth bus; and

a decoder having four input connections, a respective one to each of said first and second and third and fourth busses, and having output connections for supplying indications of said touchbar or its like being touched at its first end, between its first end and its middle, at its middle, between its middle and its second end, and at its second end, respectively.

4,543,563

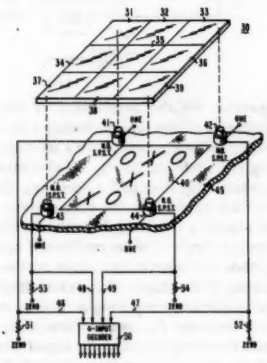
MECHANICALLY-ACTUATED TRANSPARENT TOUCHBARS AND TOUCHPLATES

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 23, 1982, Ser. No. 410,485

Int. Cl.[4] G08C *9/00*

U.S. Cl. 340—365 S **11 Claims**



1. In combination:

a touchplate having first and second opposite surfaces, the first surface having thereon a row and column array of touchpoints;

a supporting surface;

first, second, third and fourth push-button switches between said supporting surface and first, second, third and fourth support points on the second surface of said touchplate substantially opposite the first, second, third and fourth corners respectively of said row and column array of touchpoints, each of said push-button switches having at least one pair of force-actuated contacts associated therewith having a normal condition and having an alternative condition;

means responsive to the pair of force-actuated contacts of at least one of said first, second, third and fourth push-button switches being displaced from said normal condition to said alternative condition in response to user-applied force on said touchplate, for generating indications concerning to which one of said touchpoints said force is applied; and

means, included within said means for generating indications for responding to the contacts of at least two of said first, second, third and fourth push-button switches being simultaneously displaced from said normal condition to generate an indication of said force being applied to a touchpoint between touchpoints opposite those push-button switches.

4,543,564

INTERFERENCE SUPPRESSION APPARATUS FOR A CAPACITIVE KEYBOARD

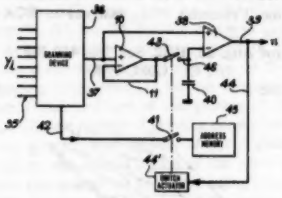
Marcel Audoin, Seyssinet; Jean-Marc Fedeli, Saint Egreve, and Robert Poujois, Sinard, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 26, 1982, Ser. No. 362,290

Claims priority, application France, Apr. 3, 1981, 81 06757; Apr. 3, 1981, 81 06758

Int. Cl.⁴ G06F *3/02*

U.S. Cl. 340—365 C **5 Claims**



1. An apparatus for the suppression of interference in a capacitive keyboard of the type including a series of sensitive keys on an outer surface accessible to a user, each key having a transmitting electrode excited by an alternating signal supplied by a transmitting line, and a receiving electrode selectively capacitively coupled to the transmitting electrode and connected to supply a receiving line, the receiving lines providing a corresponding set of unconditioned operating signals having amplitude variations dependent on the effect of the possible presence of the finger of a user on the sensitive key,

said apparatus further comprising means for establishing the difference between the unconditioned operating signal from each receiving line and the signal from a reference line in the keyboard to supply a set of conditioned operating signals free from any unwanted electromagnetic component which has entered the keyboard, said means for establishing the difference including at least one subtractor into which signals from the receiving lines are passed.

4,543,565

METHOD AND APPARATUS FOR MONITORING AN ALARM SYSTEM

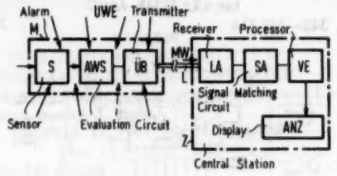
Karla Oberstein, and Peer Thilo, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,318

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1981, 3123451

Int. Cl.⁴ G08B *29/00*

U.S. Cl. 340—506 **11 Claims**



1. A method for monitoring a plurality of alarm units in an alarm system, each of said alarm units continuously emitting quiescent measured values, comprising the steps of:

cyclically sampling said luminescent measured values for each of said alarm units;

calculating a fluctuation value from successive measured values for each alarm unit representing the change in magnitude of said successive measured values;

storing a rated limiting value in a memory;

comparing said fluctuation value at selected time intervals with said rated limiting value; and

displaying a malfunction signal for an alarm unit if said fluctuation value for the alarm unit is less than said rated limiting value.

4,543,566

ELECTRONIC MONITORING SYSTEM WITH MALFUNCTION INDICATOR

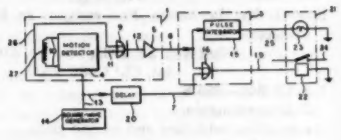
Robert Buck, Am Kirchbühl 28, 7995 Neukirch; Gerd Marhofer, Beckmannsbusch 67, 43 Essen-Bredeney, and Hans-Dieter Gesthuysen, Essen-Kettwig, all of Fed. Rep. of Germany, assignors to Robert Buck, Neukirch and Gerd Marhofer, Essen, both of, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,442

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, 3137706; Mar. 17, 1982, 3209673

Int. Cl.⁴ G08B *29/00*

U.S. Cl. 340—512 **15 Claims**



1. In an electronic monitoring system including a detector sensitive to an ambient condition for generating on an output lead a binary load-control signal assuming a predetermined value in response to a significant change in said ambient condition;

the combination therewith of:

a source of a train of recurring pulses;

modulating means connected to said source and to said output lead for shifting the phase of said pulses upon said load-control signal assuming said predetermined value; and

supervisory means connected to said modulating means for

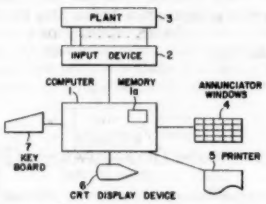
emitting an alarm indication in response to a malfunction-induced interruption of said train of pulses, said modulating means comprising an anticoincidence gate of the Exclusive-OR type selectively inverting the phase of said train of pulses in response to said load-control signal, said supervisory means comprising a pulse integrator generating a finite test signal in the absence of a malfunction, said source comprising a square-wave generator, said supervisory means further including a comparator with inputs respectively connected to said modulating means and to said square-wave generator for producing a useful d-c signal of a magnitude depending upon the relative phasing of the pulses received by said comparator.

4,543,567

METHOD FOR CONTROLLING OUTPUT OF ALARM INFORMATION

Shigenobu Shirata, Fuchu, and Kiyoshi Kurihara, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 14, 1983, Ser. No. 485,108
Int. Cl.[4] G08B *23/00*
U.S. Cl. 340—519 **8 Claims**



1. A method for controlling output of alarm information in a system for monitoring a plant wherein process variables including analog type process variables at respective sensing points in the plant are sampled and each of the sampled analog type process variables is compared with a normal range limit value for determination as to whether it is within a normal range or within an abnormal range, said method comprising steps of:

(A) determining, in accordance with changes that have occurred in the process variable during the latest sampling interval, an alarm limit level; and

(B) permitting output of alarm information in connection with the process variables that have a priority level whose value is higher than the value of the alarm limit level.

4,543,568

BURGLAR ALARM WITH RE-ENTRY FEATURE

Shih M. Hwang, P.O. Box 7-369, Taipei City, 106, Taiwan

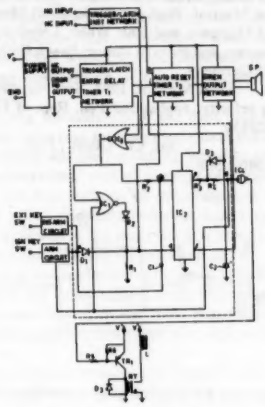
Filed Mar. 29, 1983, Ser. No. 480,124
Int. Cl.[4] G08B *23/00*
U.S. Cl. 340—528 **12 Claims**

1. A method of operating an alarm system for an enclosure having a plurality of closable entrances, comprising the steps of:

sensing the removal of a key from a key switch;

monitoring the opening and closing of said entrances;

detecting the subsequent closing of all entrances opened after the sensing of said key removal; and



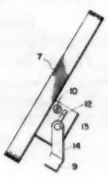
upon such detection, arming said alarm system and indicating such arming and such detection with an audible tone.

4,543,569

VEHICULAR ALARM TRIGGERING SYSTEM

J. Krister Karlstrom, Stockholm, Sweden, assignor to AudioPro Marketing, Sodertalje, Sweden

Filed May 12, 1983, Ser. No. 494,062
Int. Cl.[4] G08B *1/08;* B60R *25/00*
U.S. Cl. 340—539 **13 Claims**



1. A vehicle alarm triggering system for a vehicle having a pedal with a front and a back surface, said pedal being normally activated by applying a positive force against the front surface of the pedal, comprising:

triggering means, operatively connected to said pedal, having active and inactive operational states, and arranged to be activated by a reverse force in a direction toward the back surface of said pedal, for providing a trigger signal responsive to the triggering means being activated; and

alarm means for providing an alarm signal in response to the trigger signal.

4,543,570
DETECTING A RAPID CHANGE OF A CRITICAL PHYSICAL CONDITION

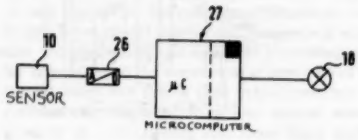
Edgar Bressert, Schwieberdingen; Gerhard Gulich, Stuttgart; Helmut Martini, Weil der Stadt; Rudi Meny; Roland Sauer, both of Stuttgart, and Rolf Wöhr, Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 26, 1983, Ser. No. 498,249

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220434

Int. Cl.⁴ G08B *17/06*

U.S. Cl. 340—589 **2 Claims**



1. Apparatus for detecting the occurrence of combustion in a thermal deburring apparatus, comprising

means for producing an electrical signal representative of the temperature in a thermal deburring chamber in a manner responsive to rapid changes ot temperature (**10, 11; 19–23**);

a differential amplifier (**16, 24**) having an output and having first and second inputs (**14, 15**) of mutually opposite effect on said output;

delay circuit means (**12**) for delaying said signal and applying the delayed resulting signal to said first input (**14**) of said differential amplifier;

electrical connecting means (**13**) having a diode (D) interposed therein for supplying without substantial delay to said second input (**15**) of said differential amplifier a rectified portion, representative of temperature rise, of said temperature representative signal;

means, comprising a variable resistance network connected to the output and one of said inputs of said differential amplifier selected for providing positive feedback, for applying variably settable positive feedback to said differential amplifier and causing the latter to operate as a hysteresis threshold switch, and

a device for indicating at least one switching condition of said differential amplifier.

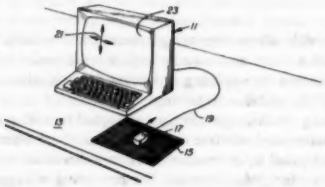
4,543,571
OPTO-MECHANICAL CURSOR POSITIONING DEVICE

Robert A. Bilbrey, Orinda, and Bruce R. Koball, Berkely, both of Calif., assignors to Universal Supply, Inc. and Edward F. Towers, both of San Francisco, Calif.

Filed Nov. 5, 1982, Ser. No. 439,552

Int. Cl.⁴ G09G *1/00*

U.S. Cl. 340—710 **6 Claims**



1. A device for controlling the position of a cursor in a display instrument, comprising:

an enclosure adapted to rest on a surface and be moveable by hand thereacross;

optical means responsive to relative motion between said enclosure and a surface for detecting the extent of motion of said enclosure relative to said surface, said optical means being contained within said enclosure and requiring no physical contact with said surface, and

mechanical means within said enclosure and independent of said optical means for detecting the direction of movement of said enclosure across said surface without having to physically contact said surface other than the enclosure being adapted to rest on said surface.

thereby optically developing a signal proportional to distance traversed and independently developing a signal indicating the direction of such movement, whereby said signals in combination are usable to controllably move a cursor across a display instrument.

4,543,572
ROAD MAP DISPLAY SYSTEM WITH INDICATIONS OF A VEHICLE POSITION AND DESTINATION

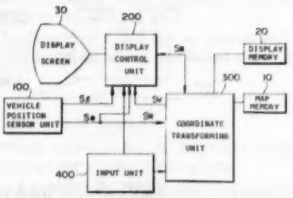
Haruto Tanaka; Kiyoshi Yamaki, and Hidetaka Suzuki, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 29, 1982, Ser. No. 373,168

Claims priority, application Japan, May 13, 1981, 56-70781

Int. Cl.⁴ G09G *1/08*

U.S. Cl. 340—723 **12 Claims**



1. A road map display system for an automotive vehicle comprising:

a first memory storing map image data arranged in a map coordinate system having an x-axis and a y-axis;

a first sensor for detecting the position of a vehicle in said map coordinate system and producing a first sensor signal representative of the detected vehicle position;

a second sensor for detecting the direction of vehicle travel and producing a second signal representative of the angular offset between the detected direction and the axes of the map coordinate system;

first means for determining the map coordinates of a destination and producing a third signal representative of the position of the determined destination;

second means for determining the origin of a second coordinate system having an x-axis and a y-axis in accordance with both said first sensor signal and said third signal and aligning the y-axis of said second coordinate system parallel to the detected direction of travel;

third means for transforming the coordinates of said map image data in said first memory to said second coordinate system;

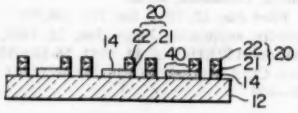
a second memory storing at least part of the map image data in the second coordinate system; and

fourth means, incorporating a display screen, for displaying the map image data stored in said second memory and symbols representing the information indicated by said first, second, and third signals.

4,543,573
DISPLAY PANEL

Moriaki Fuyama; Katsumi Tamura; Makoto Morijiri; Mamoru Sawahata, and Hiroaki Hachino, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,458
Claims priority, application Japan, Mar. 31, 1981, 56-46504
Int. Cl.[4] G09G 3/00
U.S. Cl. 340—781 11 Claims

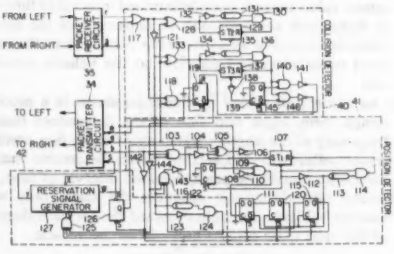


1. A display panel comprising:
a pair of substrates arranged face to face with each other with a predetermined gap therebetween;
at least a pair of electrodes each provided on a corresponding one of facing surfaces of said substrates, at least one of said electrodes being made up of a multiplicity of picture element electrodes which are juxtaposed to each other and formed of a transparent conductive film, and a transparent conductive film and a contact metal member for substantially making an electrical connection of a plurality of ones of said picture element electrodes, said contact metal member being made up of a first layer formed on said transparent conductive film forming said electrical connection and a second layer, said first layer being made of chromium or a chromium alloy, said second layer being formed on said first layer and made of nickel or gold; and
a display substance provided between said electrodes.

4,543,574
SYSTEM FOR RESOLVING COLLISION IN LOCAL NETWORK

Akihiro Takagi; Shinichi Yamada, and Syohei Sugawara, all of Kanagawa, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,532
Claims priority, application Japan, Sep. 28, 1981, 56-151972; Nov. 17, 1981, 56-184112; Nov. 17, 1981, 56-184113
Int. Cl.[4] H04Q 9/00; H04J 6/00
U.S. Cl. 340—825.5 9 Claims



1. A system for resolving data collision which occurs when a multiple of conflicting nodes essentially concurrently transmit respective data packets in a local network wherein a plurality of nodes which respectively comprise processors and terminal equipment are operated in accordance with a contention system, each of said nodes comprising:
(a) transmitting means for transmitting a data packet or a signal such as a reservation signal to other nodes which are located in a first direction or a second direction along a transmission line;
(b) receiving means for receiving a data packet or a signal such as a reservation signal received from other nodes which are located in the first direction or the second direction along the transmission line;
(c) data collision detecting means for detecting data collision when said transmitting means is transmitting the data packet and said receiving means receives another packet transmitted from another node within a predetermined period of time after starting transmission of the data packet by said transmitting means;
(d) means for stopping transmission of the data packet when said data collision detecting means detects data collision;
(e) discriminating means for discriminating whether said each node is at a predetermined end of a string of a number of nodes involved in a data collision by detecting that the data packet received when said data collision detecting means detects the data collision is not received in a predetermined direction between the first and second directions;
(f) means for allowing said transmitting means to retransmit the data packet which has been stopped when said discriminating means determines that each said node is at the predetermined end of the string of the number of nodes involved in the data collision;
(g) means for allowing said transmitting means to transmit a reservation signal sufficiently shorter than the data packet in a direction opposite the predetermined direction after another node at the predetermined end completes retransmission of the data packet when said discriminating means determines that each said node is not located at the predetermined end of the string of the number of nodes involved in the data collision;
(h) means for allowing said transmitting means to transmit the data packet after transmitting the reservation signal when the reservation signal from said another node is not received by said receiving means while said transmitting means transmits the reservation signal;
(i) means for allowing said transmitting means to stop transmission of the reservation signal and for allowing said transmitting means to transmit the reservation signal after said another node completes retransmission of the data packet when said receiver means receives the reservation signal from said another node while said transmitting means transmits the reservation signal; and
(j) retransmission end detecting means for detecting an end of retransmission of the data packets by all nodes involved in the data collision.

4,543,575
ELECTRIC CIRCUIT FOR REMOTELY CONTROLLING A SELECTED ONE OF A PLURALITY OF MAGNET VALVES

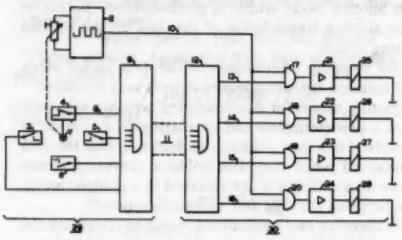
Peter Liermann, Barsinghausen, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 24, 1983, Ser. No. 469,321
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208394
Int. Cl.[4] H04Q 3/00
U.S. Cl. 340—825.57 10 Claims

1. An electrical circuit for remotely controlling each electrical condition of a plurality of magnet valves comprising:
(a) a transmitter having a signal generator for producing a periodic signal which is conveyed to a first transmission link,
(b) said signal generator having a duty cycle which is adjusted by an adjustable control member,
(c) said transmitter including a selection switch to remotely control the electrical condition of said plurality of magnet valves,
(d) said selection switch including a movable element which is ganged to said adjustable control member,
(e) said transmitter including a coding network which is

connected between said selection switch and a second transmission link,

(f) a receiver including said plurality of magnet valves and including a decoding network connected to said second transmission link, and



(g) said coding network produces a coded output control signal on said second transmission link which is decoded by said decoding network for selectively conditioning a given one of said plurality of said magnet valves to be energized by the periodic signals developed on said first transmission link.

4,543,576

SYSTEM FOR MEASURING ELECTRICAL RESISTANCE AND TEMPERATURE DURING MANUFACTURE OF THIN, CONDUCTIVE FILMS DEPOSITED ON SUBSTRATES BY MEANS OF EVAPORATION OR SPUTTER DEPOSITION

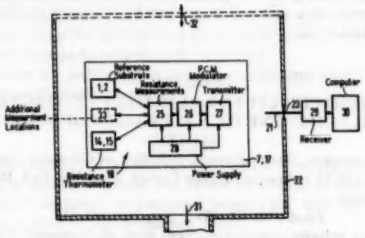
Konrad Hieber, and Norbert Mayer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 381,898

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1981, 3123427

Int. Cl.⁴ G08C *19/16;* **C23C** *13/02, 15/00*

U.S. Cl. 340—870.17 **19 Claims**



1. A system for measuring electrical resistance and temperature during the manufacture of a thin, conductive film deposited on a substrate by means of evaporation or sputter-deposition, comprising: an evacuated processing unit for deposition of the conductive film and having an evacuatable load lock chamber; a movable substrate holder; a reference substrate; deposited film geometry defining means; means for measuring an electrical resistance of the deposited film on the reference substrate according to a two-point or four-point measuring method, said means for measuring including low-resistance contacts and resistance thermometer means for measuring substrate temperature; and transmitting means for producing and transmitting measured data, obtained in conjunction with the measuring means in a contact-free manner, to an exterior of the processing unit by electro-magnetic radiation; and said means for transmitting being attached as an independent unit to the movable substrate holder.

4,543,577

MOVING OBSTACLE DETECTION SYSTEM FOR A VEHICLE

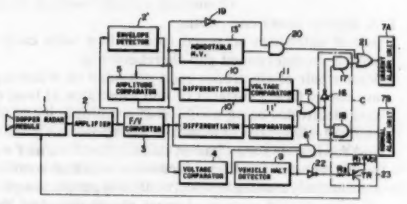
Akira Tachibana, Yokosuka; Norio Fujiki, Yokohama; Hiroshi Endo, Yokosuka; Kiyoshi Yamaki, and Norimasa Kishi, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 15, 1982, Ser. No. 388,704

Claims priority, application Japan, Jun. 22, 1981, 56-96349; Jun. 19, 1981, 56-91503[U]; Jul. 14, 1981, 56-103453[U]

Int. Cl.⁴ G08G *1/00;* **G01S** *13/00, 15/93*

U.S. Cl. 340—904 **21 Claims**



1. A moving obstacle detection system for an automotive vehicle, which comprises:

(a) a doppler radar unit which operatively transmits a wave having a fixed frequency toward a forward direction of the vehicle when the vehicle halts, receives the reflected wave from a moving obstacle in front of the vehicle, and outputs a doppler signal having a frequency corresponding to the frequency difference between the transmitted and reflected waves and an amplitude which changes according to the distance between the vehicle and moving obstacle;

(b) a first means responsive to the doppler signal from said doppler radar unit for determining whether the frequency of the doppler signal exceeds a first predetermined value so as to detect the approach or departure of a moving obstacle toward or away from the vehicle;

(c) a second means responsive to the doppler signal for determining whether the duration of the amplitude level of the doppler signal which exceeds a second predetermined value exceeds a predetermined interval of time so as to distinguish the approach or departure of the moving obstacle toward or away from the vehicle from the movement of an obstacle transverse to the vehicle direction; and

(d) an alarm unit which produces an alarm in a predetermined form when said first means determines that the frequency of the doppler signal exceeds the first predetermined value and said second means determine that the duration exceeds the predetermined interval of time,

whereby said alarm unit produces the alarm only when another vehicle approaches toward the forward direction of the vehicle or departs away from the vehicle.

4,543,578

COURSE GUIDANCE AND DISPLAY APPARATUS FOR VEHICLES

Makoto Tomoyori, and Masashi Fuse, both of Iwate, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Aug. 11, 1982, Ser. No. 407,111

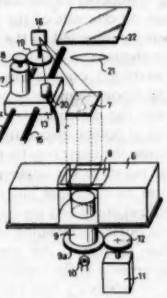
Claims priority, application Japan, Aug. 11, 1981, 56-125500

Int. Cl.⁴ G08C *1/12*

U.S. Cl. 340—995 **7 Claims**

1. A course guidance and display apparatus for vehicles comprising:

a direction sensor;
a speed sensor;
a trace device provided with a laser depiction stage, trace plate, and a rotary mirror, said rotary mirror being irradiated with a laser beam so as to scan the trace plate and trace a traveling locus corresponding to detection signals from said direction sensor and said speed sensor;
a map on microfilm;



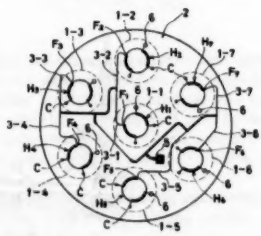
a projector provided with a light source and a projecting magnifier lens between which said trace plate and said map are interposed such that said projector magnifies and projects the traveling locus traced by the trace device and the map in superposed fashion; and
a projection screen on which the traveling locus and map is projected,
wherein the traveling locus is traced when said trace plate is iradiated with the laser beam, and the traced information is erased in an erasing mode of the trace device.

4,543,579

CIRCULAR POLARIZATION ANTENNA

Tasuku Teshirogi, Koganei, Japan, assignor to Radio Research Laboratories, Ministry of Posts and Telecommunications, Tokyo, Japan

Filed Nov. 9, 1983, Ser. No. 550,120
Claims priority, application Japan, Mar. 29, 1983, 58-51498
Int. Cl.⁴ H01Q *21/06, 21/24;* H04B *7/10*
U.S. Cl. 343—365 **5 Claims**



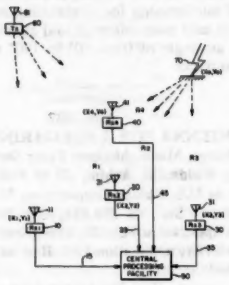
1. A circular polarization antenna comprising:
a plurality of antenna elements having identical polarization characteristics and each having at least one feed point, said antenna elements being N ($N \geqq 3$) in number and spacially positioned on a plane at an orientation angle according to $p\pi/N$ rad. (where p is an integral number of $1 \leqq p \leqq N-1$ with respect to the boresight direction, and
a feed section connected to said antenna elements in respective differential phase shifts corresponding to said angular orientation of said antenna elements.

4,543,580

SYSTEM FOR LIGHTNING GROUND STROKE POSITION BY TIME OF ARRIVAL DISCRIMINATION

Rodney B. Bent, Indialantic, and Paul W. Casper, West Melbourne, both of Fla., assignors to Atlantic Scientific Corporation, Melbourne, Fla.

Filed Jan. 15, 1982, Ser. No. 339,789
Int. Cl.⁴ G01S *1/44, 1/24*
U.S. Cl. 343—460 **30 Claims**



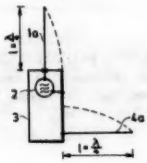
11. A system for locating the position of a lightning stroke comprising:
a plurality of non collinear first means defining a perimeter, respectively situated at spaced apart geographical locations, for detecting said lightning stroke and encoding the occurrence of said lightning stroke in terms of a common LORAN navigation signal; and
second means, coupled to said first means, for deriving, from said encoded occurrences, the position of said lightning stroke, irrespective of whether said lightning stroke occurred within or outside the perimeter bounded by said spaced apart geographical locations.

4,543,581

ANTENNA ARRANGEMENT FOR PERSONAL RADIO TRANSCEIVERS

Mihaly Nemet, Budapest, Hungary, assignor to Budapesti Rádió technikai Gyár, Hungary

Filed Jul. 2, 1982, Ser. No. 394,837
Claims priority, application Hungary, Jul. 10, 1981, 2039/81
Int. Cl.⁴ H01Q *1/24*
U.S. Cl. 343—702 **8 Claims**



1. A hand-held personal radio transceiver and antenna combination comprising:
(a) a housing (3) made of conductive material and adapted to be held in a user's hand when in use;
(b) a high-frequency transmitter and receiver (2) in said housing having a warm terminal for transmitting and receiving high-frequency signals, and a cold terminal, said warm terminal being isolated from said conductive material of said housing;
high-frequency connector means for connecting said conductive material to said cold terminal;
a resonant main antenna (1) which is shorter than the quar-

terwave of signals to be transmitted and received by said high-frequency transmitter and receiver, said main antenna connected to said warm terminal and extending out from one end of said housing;

isolating means connected between said main antenna and said housing for isolating said main antenna from said conductive material of said housing; and

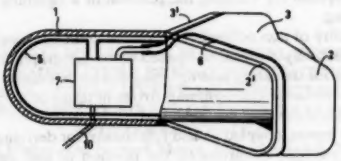
a resonant auxiliary antenna (4) which is shorter than the quarterwavelength, pivotally connected to said conductive material of said housing at a location remote from said end of said housing for establishing an electrical counterpoise to said main antenna, said auxiliary antenna extending at an angle of from 90° to 180° with respect to said main antenna.

4,543,582

ANTENNA FOR A SUBMARINE VESSEL

Dieter Heilwege, Mittelnkirchen; Peter Steffen, Sudweyhe, and Wolfgang Waldhelm, Achim, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 295,871, Aug. 24, 1981, abandoned.
This application Feb. 28, 1984, Ser. No. 584,411
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1980, 3031694
Int. Cl.⁴ H01Q 1/34
U.S. Cl. 343—710 **5 Claims**



1. A cross-loop antenna for a submarine vessel, comprising:

a floating body (1) having a torpedo-like shape and two hydrofoil-like projections (2, 3) that interconnect the top and bottom of the trailing part of said body;

a first antenna loop (5) arranged near the outer skin of said body in a perpendicular plane through the axis of said body;

a second antenna loop (6) arranged in the hydrofoil-like projections (2, 3);

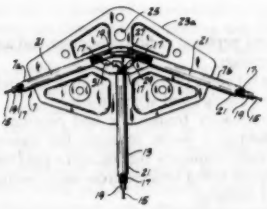
and a connecting element (10) connected to the bottom of the leading part of said body for transmitting information received by the antenna to the submarine vessel.

4,543,583

DIPOLE ANTENNA FORMED OF COAXIAL CABLE

Gerard A. Wurdack, Glencoe, Mo., assignor to Gerard A. Wurdack & Associates, Inc., Frontenac, Mo.

Filed Jun. 6, 1983, Ser. No. 501,255
Int. Cl.⁴ H01Q 9/44, 1/16, 3/30
U.S. Cl. 343—792 **14 Claims**



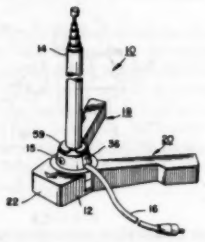
1. A dipole antenna and a feedline therefor both formed from coaxial line having an inner conductor, an outer shield conductor surrounding said inner conductor and spaced and insulated therefrom by a flexible dielectric layer therebetween and a jacket of insulating material covering the outer shield conductor; said dipole coaxial line having said jacket removed from a central portion thereof to expose the outer conductor which is there severed and spread apart to form a gap exposing the dielectric layer, the lengths of coaxial line on each side of the gap comprising dipole elements; the feedline having the jacket removed from one end portion thereof with the inner conductor thereof being connected to the outer shield conductor of one dipole element on one side of the gap and the outer conductor thereof being connected to the outer shield conductor of the other dipole element on the other side of the gap thereby to form center feedpoint connections between the feedline conductors and the dipole elements; a portion of the jacket and the outer shield and the dielectric layer being removed from the dipole elements at points spaced from the center feedpoint connections to expose the inner conductor which is electrically connected at these points to the adjacent outer shield conductor thereby to form an electrical junction between the outer shield of each dipole element and the continuous inner conductor, the coaxial line portion extending between these junctions comprising a balun to match the impedance of the dipole elements to the impedance of the feedline; and clamping means comprising a pair of relatively thin flat clamping members of substantially rigid insulating material adapted to be fastened together face to face with said feedpoint connections and adjacent coaxial line portions therebetween, the opposing faces of said members being formed to provide a central cavity for receiving and completely enclosing said center feedpoint connections therein and a plurality of passages radiating from said cavity for receiving portions of the dipole coaxial line on opposite sides of the gap and the portion of the feedline adjacent said center feedpoint connections, said passages having a cross sectional dimension somewhat smaller than that of the coaxial line whereby the passage walls are adapted to grip the coaxial lines passing therethrough and to hold them in fixed position with respect to said feedpoint connections in said cavity and with respect to one another for providing strain relief.

4,543,584

COLLAPSIBLE MAGNETIC ANTENNA MOUNT

Stuart D. Leer, Dewitt, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Apr. 18, 1983, Ser. No. 486,119
Int. Cl.⁴ H01Q 1/08
U.S. Cl. 343—881 **6 Claims**



1. A collapsible antenna mount comprising:

support means,

a pair of elongated arms each having proximate and distal ends, each of said elongated arms being supported at its proximate end by said support means,

interconnecting means at least partially including said support means pivotally interconnecting said elongated arms at the proximate ends thereof, said interconnecting means

permitting relative pivotal movement of said elongated arms between a collapsed configuration in which the distal ends of said arms are in proximity and a deployed configuration in which the distal ends of said arms are spaced-apart from each other, said interconnecting means further including means for establishing and limiting the included angle between said pair of arms in said deployed configuration,

said support means providing a mounting point adjacent the proximate ends of said elongated arms and each of said elongated arms providing a mounting point adjacent the distal end thereof, and

a plurality of magnetic means each located at a respective one of said mounting points for magnetically attaching the antenna mount to a metallic surface,

said support means further comprising means for supporting a rod antenna in an upright position substantially normal to the plane established by said mounting points, and said support means having an at least slightly elongated configuration in substantially the plane established by said mounting points, said elongated configuration extending away from the distal ends of said elongated arms along an axis substantially bisecting the included angle between said arms in said deployed configuration, and said elongated configuration including air deflection means at the end thereof remote from the distal ends of said arms.

4,543,585

MECHANISM FOR DRIVING A PEN RECORDER

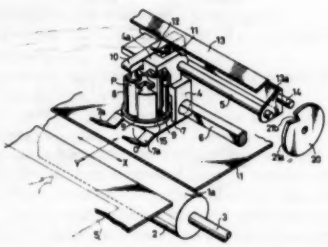
Takanobu Matsuura, Takizawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed May 23, 1984, Ser. No. 613,098

Claims priority, application Japan, May 23, 1983, 55-77319[U]

Int. Cl.⁴ G01D *9/28, 15/16*

U.S. Cl. 346—49 **3 Claims**



1. A mechanism for driving a pen recorder, comprising:

(a) a carriage movable with respect to a recording sheet;

(b) a pen holder rotatably mounted on said carriage and carrying a plurality of pens, said pen holder having a writing position in which one of said pens at a time can be located, said pen holder including a rotatable pen selector mechanism;

(c) a hammer swingably mounted on said carriage for pressing one of said pens in said writing position toward the recording sheet;

(d) a motor;

(e) a cam rotatable by said motor;

(f) a lever for actuating said hammer, said lever having a portion held in sliding contact with said cam, so that said hammer can be driven by said cam;

(g) an intermittent gear rotatable in unison with said cam; and

(h) a driven gear held in mesh with said intermittent gear and having a shaft coupled with said rotatable pen selector mechanism.

4,543,586

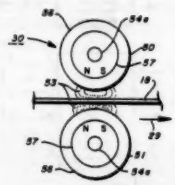
MAGNETIZING APPARATUS FOR A MAGNETOGRAPHIC PRINTER

Delmer G. Parker, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 27, 1984, Ser. No. 625,285

Int. Cl.⁴ G01D *15/12*

U.S. Cl. 346—74.4 **6 Claims**



1. A magnetizing apparatus for use in a thermoremanent magnetographic printer to pre-magnetize selectively a movable magnetic recording medium of the printer at a pre-magnetization station prior to the recording medium's entry into an imaging station whereat a latent magnetic image is formed in the surface thereof, comprising:

at least one pair of elongated, permanent magnets being rotatably mounted upstream of the imaging station of the printer, the magnets being parallel to each other and spaced apart a predetermined distance to form a gap therebetween, the magnetic recording medium being movable between the magnets substantially in the center of said gap and in a direction perpendicular to said magnets; and

means for selectively rotating the magnets about their elongated direction from a first position whereat the magnetic recording medium is pre-magnetized, to a second position whereat the magnetic recording medium is not pre-magnetized; when the magnets are in said first position, components of the magnetic field of said magnets are additive in the plane of the recording medium and components of the magnetic field cancel each other in the plane normal to the recording medium, and when the magnets are in said second position, the magnetic fields of the magnets are removed from the vicinity of the recording medium, so that a previously formed latent image on said recording medium may pass between the magnets unaltered, when the magnets are in their second position, for the production of multiple copies by the printer without the need of reforming that image at the imaging station.

4,543,587

THERMAL HEAD DRIVING SYSTEM

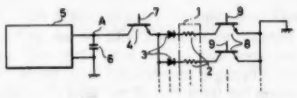
Masami Kurata, and Toshiharu Inui, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 14, 1983, Ser. No. 458,081

Claims priority, application Japan, Jan. 20, 1982, 57-6131

Int. Cl.⁴ G01D *15/10*

U.S. Cl. 346—76 PH **8 Claims**

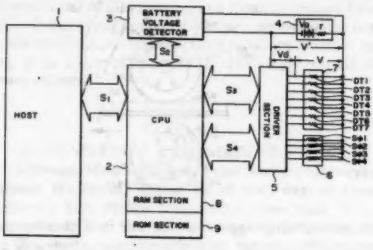


4. A thermal head driving system, comprising; a DC power source, capacitor means connected in parallel with said power source, means for determining the ratio of printable video signals from among a plurality of video signals for one printing line, and means for determining a charging time for said capacitor means in response to the magnitude of said ratio.

4,543,588
DOT PRINTER

Hiroshi Fukui, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1983, Ser. No. 511,171
Claims priority, application Japan, Jul. 17, 1982, 57-124764
Int. Cl.⁴ B41J *1/24*
U.S. Cl. 346—76 PH 9 Claims

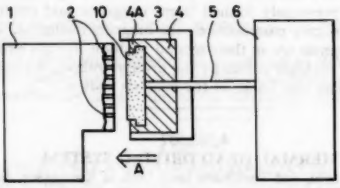


1. A dot printer comprising:
a head having m print elements arranged in a column;
memory means for storing data to be printed by said head;
pattern generating means for generating a plurality of dot patterns, each having n columns by m rows of dots, for the data stored in said memory means, the number of dots in any column of any dot pattern being less than m; and
drive means for driving said print elements of said head in accordance with the dot pattern generated by said pattern generating means.

4,543,589
CAPPING DEVICE FOR INK JET NOZZLE

Koji Terasawa, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 429,452
Claims priority, application Japan, Oct. 8, 1981, 56-160425
Int. Cl.⁴ G01D *15/18*
U.S. Cl. 346—140 R 4 Claims

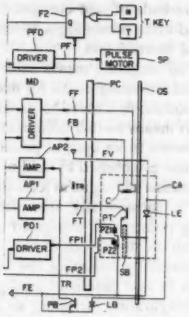


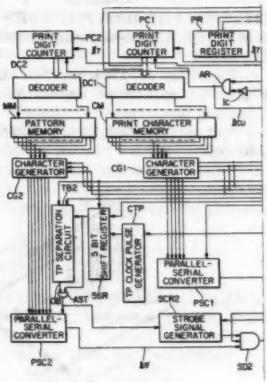
1. A capping device for an ink jet printer comprising:
means for generating a negative pressure; and
means for covering the front end of an ink jet head including ink jet nozzles, said covering means including an ink absorbing element and an elastic member surrounding said ink absorbing element and arranged in such a position as to be brought into contact with the ink jet head to tightly seal the front end of the head after said ink absorbing element is brought into contact with the front end of the head when the front end of the head is covered with said covering means, said ink absorbing element being arranged in such a position as to be brought into contact with the front end of the head and being adapted to apply the negative pressure generated by said negative pressure generating means to the front end of the head through said ink absorbing element thereby extracting ink in the nozzles.

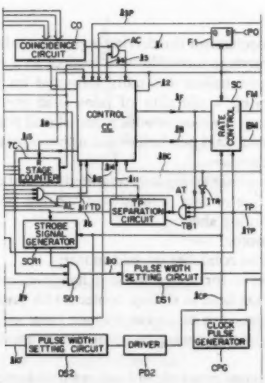
4,543,590
ELECTRONIC APPARATUS WITH PRINTER

Shigemitsu Tazaki, Matsudo, and Hiroshi Kyogoku, Mine, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 464,575, Feb. 7, 1983, abandoned. This application Jul. 17, 1984, Ser. No. 631,014
Claims priority, application Japan, Feb. 17, 1982, 57-22806
Int. Cl.⁴ G01D *15/18*
U.S. Cl. 346—140 R 11 Claims







1. An ink jet printer comprising:
a first ink jet nozzle for jetting ink of a first color;

a second ink jet nozzle for jetting ink in a second color different from said first color,

first memory means associated with said first ink jet nozzle for storing information to be printed by said first ink jet nozzle,

second memory means associated with said second ink jet nozzle for storing information to be printed by said second ink jet nozzle, and

control means for selectively providing to said second ink jet nozzle and said first ink jet nozzle information stored in said respective memory means for printing a background pattern with one said ink jet nozzle and characters that appear to be superimposed on the background pattern with the other said ink jet nozzle.

4,543,591

SUCTION RECOVERY APPARATUS

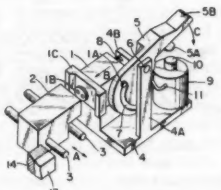
Koji Terasawa, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,416

Claims priority, application Japan, May 11, 1982, 57-79402

Int. Cl.⁴ G01D *15/18*

U.S. Cl. 346—140 R **8 Claims**



1. A suction recovery apparatus comprising:

capping means for capping the end of a recording head for discharging ink;

holding means for mounting said capping means for movement toward said recording head;

negative pressure generating means for generating a negative pressure; and

a lever rotatable about an axis for moving said capping means toward said recording head by rotation about said axis in one direction to cap the end of said recording head and causing said negative pressure generating means to generate a negative pressure on the end of said recording head.

4,543,592

SEMICONDUCTOR INTEGRATED CIRCUITS AND MANUFACTURING PROCESS THEREOF

Manabu Itsumi, Hoya; Kohei Ehara, Kodaira; Susumu Muramoto, and Seitaro Matsuo, both of Hachioji, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Continuation of Ser. No. 369,234, Apr. 16, 1982, abandoned. This application Nov. 9, 1984, Ser. No. 670,661

Claims priority, application Japan, Apr. 21, 1981, 56-61070

Int. Cl.⁴ H01L *27/02, 29/06*

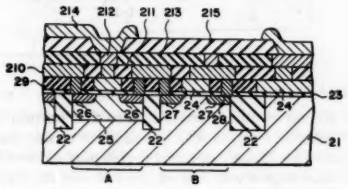
U.S. Cl. 357—43 **3 Claims**

1. A semiconductor integrated circuit comprising:

an active region formed in a semiconductor substrate and composed of a source region, a channel region and a drain region;

a field isolation region formed of an insulating material and provided in said semiconductor substrate, for isolating said active region from other active regions, the upper surface of said field isolation region being substantially flush with the upper surface of said semiconductor substrate, said field isolating region having a substantially rectangular cross section;

a gate electrode formed on a gate insulating film on said channel region, and source and drain electrodes provided in contact with said source and drain regions, respectively, each of said electrodes having a substantially rectangular cross section;



a first insulating layer buried in said electrodes, for isolating said electrodes from one another, the surface of said first insulating layer being substantially flush with the surfaces of said electrodes;

a gate electrode interconnection line, a source electrode interconnection line and a drain electrode interconnection line connected to said gate, source and drain electrodes, respectively, each of said interconnection lines having a substantially rectangular cross section; and

a second insulating layer buried in said interconnection lines, for isolating said interconnection lines from one antother, the surface of said second insulating layer being flush with the surface of said interconnection lines.

4,543,593

SEMICONDUCTOR PROTECTIVE DEVICE

Katsuji Fujita, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 13, 1983, Ser. No. 531,619

Claims priority, application Japan, Sep. 14, 1982, 57-159956

Int. Cl.⁴ H01L *27/04*

U.S. Cl. 357—48 **19 Claims**

1. A semiconductor protective device comprising:

a semiconductor substrate of one conductivity type;

a first region formed on said semiconductor substrate and being of a conductivity type opposite to that of said semiconductor substrate;

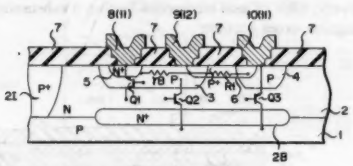
second and third regions formed in a surface layer of said first region and being of the same conductivity type as that of said semiconductor substrate;

a first transistor emitter region formed in said second region

and being of a conductivity type opposite to that of said semiconductor substrate;

a low-resistance region formed across said second region and said third region, having an impurity concentration higher than that of said second and third regions and being of the conductivity type opposite to that of said first region;

a first electrode formed on said first transistor emitter region;



a second electrode connected to that portion of said low-resistance region which is adjacent to said second region;

a third electrode connected to that portion of said low-resistance region which is adjacent to said third region;

a first wiring layer connecting said first electrode and said third electrode and connected to an external terminal; and

a second wiring layer connecting a circuit formed on said semiconductor substrate and said second electrode.

4,543,594

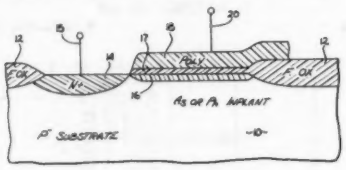
FUSIBLE LINK EMPLOYING CAPACITOR STRUCTURE

Amr M. Mohsen, Lake Oswego, and Dwight L. Crook, Cornelius, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 415,247, Sep. 7, 1982, abandoned. This application Mar. 27, 1985, Ser. No. 716,593

Int. Cl.⁴ H01L *21/479, 23/54, 29/94, 21/326*

U.S. Cl. 357—51 **2 Claims**



1. In an integrated circuit formed on a silicon substrate, an apparatus for providing a discretionary, permanent electrical connection, comprising:

an insulative layer between 50–150A thick and having an area between 10 to 500 (micro m)^2 disposed on said substrate;

an electrode formed of polysilicon material only formed on said insulative layer and insulated from said substrate;

a first doped substrate region of a first conductivity type disposed in said substrate beneath said electrode;

a second substrate region of said first conductivity type disposed in alignment with said electrode and being contiguous with said first region;

circuit means for selectively applying a potential between said electrode and said second layer of sufficient magnitude to permanently deform said insulative layer such that a permanent polysilicon electrical connection is formed between said electrode and said second region, said circuit means comprising a source of DC potential between 10 to 20 volts and a current limiting resistor of approximately 1000 ohms.

4,543,595

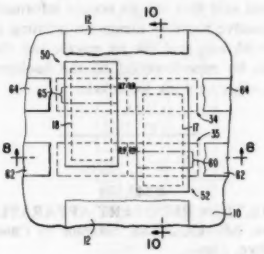
BIPOLAR MEMORY CELL

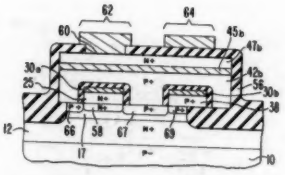
Madhukar B. Vora, Los Gatos, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 20, 1982, Ser. No. 380,184

Int. Cl.⁴ H01L *29/70, 27/04, 23/52*

U.S. Cl. 357—71 **17 Claims**





1. An integrated circuit memory cell comprising:

a semiconductor substrate;

a first transistor and a second transistor formed in the substrate and each including a base, a collector, and an emitter;

first and second connections of semiconductor material each extending between the base of one of the first and second transistors and the collector of the other of the first and second transistors, portions of the first and second connections being doped to correspond to the conductivity type of the base or the collector contacted;

first and second layers of electrically conductive material deposited on the first and second connections, respectively;

first and second regions of semiconductor material deposited on the substrate to contact the base of the first and second transistors, respectively; and

third and fourth layers of electrically conductive material deposited on the first and second regions of semiconductor material, respectively;

third and fourth regions of semiconductor material deposited on the third and fourth layers of electrically conductive material, respectively; and

fifth and sixth regions of electrically conductive material deposited in contact with selected portions of the third and fourth regions of semiconductor material, respectively, form a first and a second Schottky diode connected to the bases of the first and second transistors respectively.

4,543,596
INSULATED-GATE FIELD-EFFECT TRANSISTOR (IGFET) WITH INJECTOR ZONE

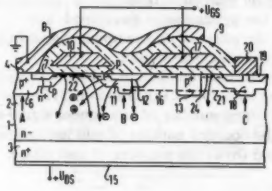
Helmut Strack, and Jenö Tihanyi, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 510,081

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1982, 3224642

Int. Cl.⁴ H01L *27/02, 29/78*

U.S. Cl. 357—23.4 **6 Claims**



1. IGFET assembly, comprising a semiconductor substrate of a given first conductivity type having first and second surfaces, an IGFET having at least one channel zone of a second conductivity type opposite said first given conductivity type embedded in said first surface of said substrate, a source zone of said first conductivity type embedded planar in said channel zone, a drain zone adjacent said first surface of said substrate, a drain electrode connected to said second surface of said substrate, an insulating layer disposed on said first surface of said substrate, at least one gate electrode disposed on said insulating layer, a bipolar transistor having at least one base zone of said second conductivity type embedded in said first surface of said substrate, and an emitter zone of said first conductivity type embedded in said base zone, said emitter zone having a heavier doping than said base zone, said base zone including first parts and second parts thereof emerging to said first surface of said substrate, said drain zone having parts thereof emerging to said first surface of said substrate, and first parts of said base zone and said parts of said drain zone emerging to said first surface of said substrate being covered by said gate electrode, an auxiliary FET disposed in said substrate and having a source zone, a channel zone and a drain zone, said drain zone and said channel zone having parts thereof emerging to said first surface of said substrate, said channel zone of said auxiliary FET being electrically connected to said base zone, a floating contact contacting said source zone and said channel zone of said auxiliary FET, a further gate electrode disposed on said insulating layer and covering said second parts of said base zone and said part of said channel zone of said auxiliary FET emerging to said first surface of said substrate, and said base zone having a surface and having a doping, at least at said surface thereof, forming channels in said surface of said base zone connecting said drain zones of said IGFET and of said auxiliary FET to said emitter zone when a voltage is present switching said IGFET into conduction.

4,543,597
DYNAMIC SEMICONDUCTOR MEMORY AND MANUFACTURING METHOD THEREOF

Tadashi Shibata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 22, 1983, Ser. No. 506,593

Claims priority, application Japan, Jun. 30, 1982, 57-112970; Dec. 28, 1982, 57-227402; Dec. 28, 1982, 57-227429

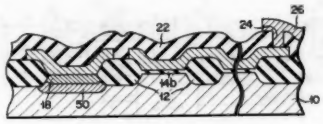
Int. Cl.⁴ H01L *29/78, 29/04*

U.S. Cl. 357—23.6 **24 Claims**

1. A method of manufacturing a dynamic semiconductor memory device having a plurality of memory cells each of which has a capacitor element, said method comprising the steps of:

forming an electrically insulative film on a semiconductive substrate of a first conductivity type, said electrically insulative film being used for a dielectric body of said capacitor element of each of said memory cells and having an opening exposing a portion of the surface of said substrate;

forming an electrically conductive layer on said insulative film and on said exposed portion of the surface of said substrate, said conductive layer corresponding to a gate electrode; and



performing a reactive ion etching step on said conductive layer while maintaining an electric contact between said conductive layer and said substrate through said opening, whereby charges produced by the reactive ion etching and stored in said insulative film are removed to said substrate via said conductive layer, thereby preventing an increase in an electric field within said insulative film and preventing damage to said insulative film due to an electrostatic dielectric breakdown.

4,543,598
COLOR TELEVISION SYSTEMS

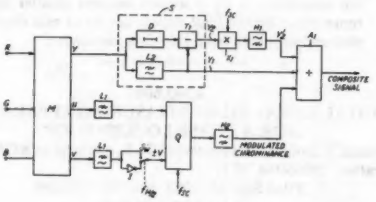
Andrew Oliphant, Reigate, England, assignor to British Broadcasting Corporation, London, England

Filed Jul. 7, 1982, Ser. No. 395,886

Claims priority, application United Kingdom, Jul. 9, 1981, 8121212

Int. Cl.⁴ H04N *9/42*

U.S. Cl. 358—11 **23 Claims**



1. A colour television encoder, comprising:

input means for receiving luminance and chrominance input signals;

means for separating out high-frequency luminance components of the luminance signal;

means for modulating the chrominance signal onto a subcarrier so that the modulated chrominance components fall in the frequency range of the high-frequency luminance components; and

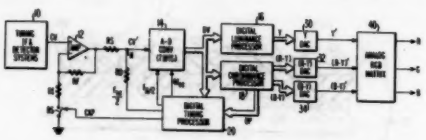
means for frequency shifting the separated high frequency luminance components to above the frequency band of the modulated chrominance components,

said frequency shifting means comprising means for multiplying said separated high frequency luminance components by a constant frequency signal to generate sum and difference frequency signals, and means for selecting the sum signal as the frequency-shifted high frequency luminance component.

4,543,599
ANALOG-TO-DIGITAL CONVERSION APPARATUS INCLUDING DOUBLE DITHER SIGNAL SOURCES

Donald H. Willis, Indianapolis, and Russell T. Fling, Noblesville, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed May 25, 1983, Ser. No. 498,136
Int. Cl.⁴ H04N 9/32
U.S. Cl. 358—13 **6 Claims**



1. In a television receiver, apparatus for producing digital samples representative of the magnitude of analog composite video signals which have a line rate associated therewith and which include a reference frequency signal component, comprising:

a clocking source for providing sampling signals having a frequency related to that of said reference frequency signal component;

a reference source for providing a reference level signal;

converting means, coupled for receiving said composite video signals and coupled to said clocking and reference sources, for developing said digital samples in response to said sampling signals and said reference level signal;

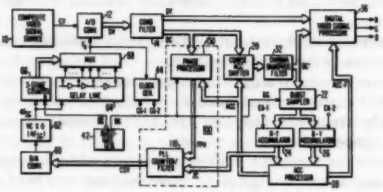
first means, coupled to said converting means, for changing the magnitude of one of said composite video signals and said reference level signal at a first periodic rate substantially equal to one-half of said line rate, which changing the magnitude is by a first amount smaller than that represented by the least significant bit of said digital samples; and

second means, coupled to said converting means for changing the magnitude of one of said composite video signals and said reference level signal at a second periodic rate substantially equal to one-half of the frequency of said reference frequency signal component, which changing the magnitude is by a second amount smaller than that represented by the least significant bit of said digital samples and different from said first amount.

4,543,600
DIGITAL SIGNAL PHASE MEASURING APPARATUS AS FOR A PHASE-LOCKED LOOP

Thomas V. Bolger, Merchantville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 19, 1983, Ser. No. 533,819
Int. Cl.⁴ H04N 9/46
U.S. Cl. 358—13 **21 Claims**



1. Measuring apparatus comprising:

a source of sampled signals developed in accordance with a sampling signal;

phasing means coupled to said source for changing the phase of said sampling signal in predetermined increments;

comparing means coupled to said source for developing indications that said sampled signals have magnitudes within a predetermined range of values; and

counting means coupled to said comparing means for counting the number of said indications to produce a measure of the phase of said sampled signals.

21. A method for measuring the phase of a sampled signal developed in accordance with a sampling signal, comprising the steps of:

(a) for a first signal sample:

(1) determining whether said signal sample has a magnitude within a predetermined range of values and, if so, developing an indication thereof;

(2) counting the indication so developed; and

(3) changing the phase of said sampling signal by a predetermined phase increment; and

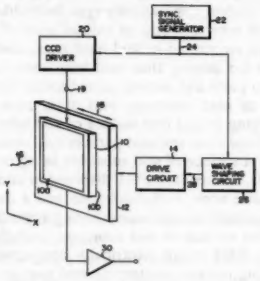
(b) for a predetermined number of subsequent signal samples, repeating steps (a)(1), (a)(2) and (a)(3) for each one of said predetermined number of subsequent signal samples;

(c) producing the counted number of said indications stored in steps (a) and (b) as the measure of said phase.

4,543,601
SOLID STATE IMAGE SENSOR WITH HIGH RESOLUTION

Nozomu Harada, and Okio Yoshida, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 20, 1982, Ser. No. 451,465
Claims priority, application Japan, Dec. 25, 1981, 56-209381; Mar. 15, 1982, 57-39429
Int. Cl.⁴ H01J 3/14
U.S. Cl. 358—213 **12 Claims**



1. A solid state image sensor for sensing a light image compatible with a predetermined television system in which one frame includes a plurality of fields including first and second fields, said image sensor comprising:

a solid state image sensing device including a substrate and a photosensing region formed on said substrate, for receiving an incident light image to generate and store therein signal charges corresponding to said light image wherein said photosensing region includes at least one linear cell array containing a predetermined number of cells, said solid state image sensing device further comprising a transfer means disposed adjacent to said linear cell array, for reading out and transfering the charges stored in said cells, said transfer means including at least one linear transfer section extending along said linear cell array; and

deflection means mechanically coupled to said solid state image sensing device, for swinging said substrate in prescribed swing mode in such a manner that each cell is located at different sensing positions during different field periods in one frame period of the television system, whereby signal charges stored in the first filed period is simultaneously read out from the cell array to the transfer section before said each cell is located at the subsequent

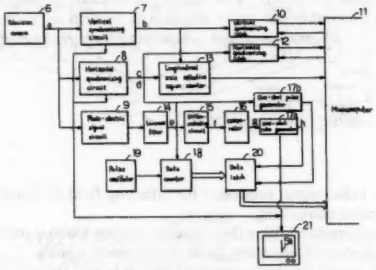
positions for storing signal charges corresponding to an image of the second field, whereby an image resolution of the one frame image is improved with respect to the whole area of said frame image.

4,543,602

SURFACE INSPECTION METHOD

Tooru Kai, Inazawa, and Chikahisa Hayashi, Anzou, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 29, 1983, Ser. No. 489,970
Claims priority, application Japan, Apr. 30, 1982, 57-74057
Int. Cl.⁴ H04N *7/18*
U.S. Cl. 358—106 **2 Claims**



1. A surface inspection method wherein parallel rays passing through a thin slit are projected onto a surface of a specimen, and a luminous line formed on the specimen surface by the parallel rays is viewed by a television camera whereby surface inspection of the specimen is carried out, said surface inspection method comprising:

(a) the step of picking up a photo-electric signal showing the luminous line from an output video signal of the television camera, said photo-electric signal being converted into a differentiation photo-electric signal by a differentiating circuit, and the differentiation photo-electric signal being converted into a pulse signal of small width rising at the transferring point from positive value to negative value, producing a pulse signal whose rising point is the zero-crossing point of said differentiated photo-electric signal;

(b) the step of measuring a time from a rising state of a horizontal synchronizing signal contained in the video signal to occurrence of a pulse of the photo-electric signal in each period of the horizontal synchronizing signal; and

(c) the step of comparing the time data in each period with a previously set reference value and discriminating whether or not the specimen passes the inspection based on variation of the comparison result.

4,543,603

RECONNAISSANCE SYSTEM COMPRISING AN AIR-BORNE VEHICLE ROTATING ABOUT ITS LONGITUDINAL AXIS

Pierre Laurès, Chatenay-Malabry, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

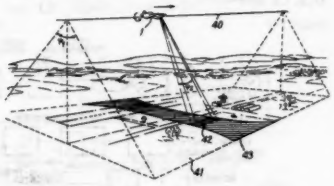
Filed Nov. 10, 1983, Ser. No. 550,538
Claims priority, application France, Nov. 30, 1982, 82 20066
Int. Cl.⁴ H04N *7/18*
U.S. Cl. 358—109 **4 Claims**

1. A reconnaissance system capable of making a reconnaissance of long duration and of long flying range over an enemy territory comprising:

a self-propelled missile capable of making manoeuvres of short duration and high acceleration and moving above said territory along a path by rotating about its longitudinal axis;

a photosensitive detector assembly fixedly attached to said self-propelled missile in a fixed rotating relationship with said missile, for giving an image of said territory;

said photosensitive detector assembly comprising at least one linear arrangement of photosensitive elements arranged parallel to said longitudinal axis of said missile, so that, at an instant during which it is directed towards said territory, said linear arrangement observes an elementary



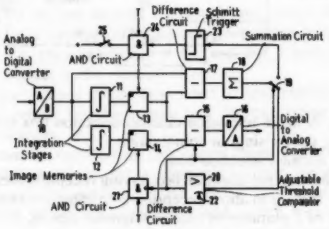
strip of said territory whose length is parallel to the corresponding instantaneous part of said path, such successive elementary strips scanning a wide strip of said territory transverse to said part of path as said missile rotates about its longitudinal axis and said image being formed by such successive transverse wide strips, as said missile moves along its path.

4,543,604

DIAGNOSTIC RADIOLOGY SYSTEM FOR ANGIOGRAPHIC X-RAY EXAMINATIONS

Burkhard Grosse, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 11, 1983, Ser. No. 483,872
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1982, 3215552
Int. Cl.⁴ H04N *7/18*; A61B *6/00*
U.S. Cl. 358—111 **15 Claims**

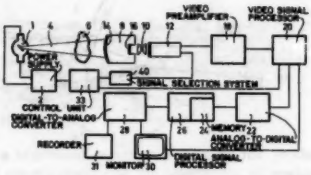


1. Diagnostic radiology system for angiographic X-ray examinations, comprising an image intensifier television installation including an image intensifier and a video camera, at least one image memory connected with said video camera, a subtraction device for coupling with the video camera and with the image memory and operable for effecting subtraction of image data occurring at different times, a video monitor for coupling with said subtraction device, characterized in that there are supplied to the subtraction device a current video signal from the video camera and a video signal averaged over several images from the image memory, a maximum detector is connected with the subtraction device, said maximum detector being responsive to the maximum of the contrast medium flow, and being connected to the image memory for controlling the storage of a filling image thereby.

4,543,605
X-RAY EXAMINATION APPARATUS

Leonardus A. J. Verhoeven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 2, 1983, Ser. No. 500,593
Claims priority, application Netherlands, Jun. 15, 1982, 8202418
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—111 11 Claims

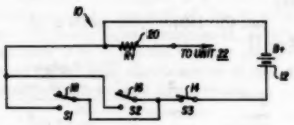


1. An X-ray examination apparatus comprising:
an X-ray image intensifier tube having an output screen for forming a visible image of an object irradiated with X-rays;
a television camera tube arranged to pick up the visible image formed at the output screen and for generating a video signal representing the visible image, said tube having a beam current; and
means for increasing the beam current of the camera tube during a selected X-ray exposure duration.

4,543,606
SECURITY DEVICE FOR CABLE TELEVISION

Robert H. Schaer, 3181-66th Way N., St. Petersburg, Fla. 33710

Filed Apr. 28, 1983, Ser. No. 489,341
Int. Cl.[4] H04N 7/16; H04K 1/00; H01R 13/44
U.S. Cl. 358—114 4 Claims

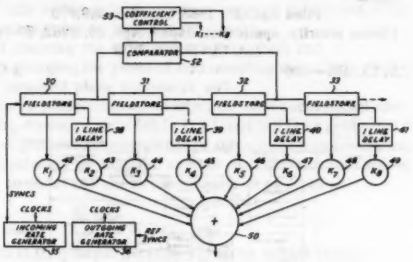


1. A cable television channel selection box anti-tamper device, comprising, in combination,
a channel selection box,
said channel selection box having reception means contained therein to allow reception by a cable television subscriber of a plurality of electromagnetic signals,
said reception means further having pre-set channel restricting means to prevent reception of predetermined signals from among said plurality of signals,
said channel selection box having a closure means to bar access by a subscriber to said reception and restricting means,
a plurality of at least two removable fastening means to detachably secure said closure means to said selection box so that authorized personnel may gain access to said reception and restricting means,
a selection box disabling means,
a disabling means bypass means,
said disabling means and said bypass means operatively connected to said fastening means such that removal of the fastening means operatively connected to the bypass means must be accomplished prior to the removal of the fastening means operatively connected to the disabling means to avoid disabling said reception and restricting means.

4,543,607
VIDEO PROCESSORS

Richard J. Taylor, London; Paul R. N. Kellar, and Stephen P. Greenhalgh, both of Newbury, all of United Kingdom, assignors to Quantel Limited, Berkshire, England

Filed Oct. 24, 1983, Ser. No. 544,916
Claims priority, application United Kingdom, Oct. 28, 1982, 8230877
Int. Cl.[4] H04N 9/42; 358 105, 11
U.S. Cl. 358—140 6 Claims



1. A video signal processor for effecting field or frame rate conversion comprising:
storage means having the capacity to store video signals in a plurality of incoming fields of television signals;
input means for writing applied signals in said storage means at a first field rate to make video signals in a plurality of said incoming fields available for processing;
processing means for deriving video signals from said storage means at a second and dissimilar field rate to generate a plurality of outgoing fields of video signals;
said processing means having a first mode of operation in which the video signals forming an outgoing field are derived from video signals taken into said storage means from a single incoming field;
said processing means having another mode of operation in which the video signals forming an outgoing field are derived by combining video signals taken into said storage means from a plurality of incoming fields;
means for comparing video signals in different fields to indicate whether or not there was substantial movement in the televised scene;
means for selecting the first mode of operation of said processing means in response to an indication of no substantial movement from said comparing means; and
means for selecting the other mode of operation of said processing means in response to an indication of substantial movement from said comparing means.

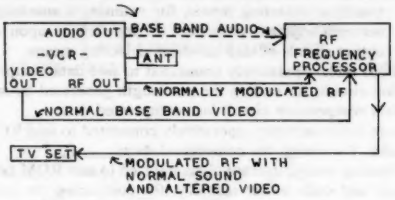
4,543,608
VIDEO TAPE RECORDER R.F. SIGNAL PROCESSOR

Henry N. Switsen, 17236 Bircher St., Granada Hills, Calif. 91344

Continuation-in-part of Ser. No. 347,339, Feb. 9, 1982, Pat. No. 4,467,358. This application Dec. 27, 1982, Ser. No. 453,595
Int. Cl.[4] H04N 5/08, 5/76
U.S. Cl. 358—153 6 Claims

1. A Radio frequency processing circuit for altering the video modulation characteristics of a previously modulated radio frequency carrier comprising:
a first input terminal to accept in said previously modulated radio frequency carrier;
a second input terminal to accept in a base band video signal from which said previously modulated radio frequency carrier obtained its video modulation information;
a first means for processing said base band video signal, for providing a source of processed base band video signal;
a second means for altering the video modulation character-

istics of said previously modulated radio frequency carrier accepted in at said first terminal; and



a third means for coupling said processed base band video signal to said second means, so as to instruct said second means as to how to alter the video characteristics of said previously modulated radio frequency carrier.

4,543,609

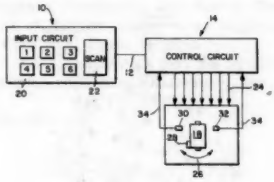
TELEVISION SURVEILLANCE SYSTEM

William V. Smith, Memphis, Tenn., assignor to Lectrolarm Custom Systems, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 255,966, Jan. 19, 1981, Pat. No. 4,369,467, which is a continuation-in-part of Ser. No. 159,172, Jun. 13, 1980, Pat. No. 4,321,625, which is a continuation-in-part of Ser. No. 60,463, Jul. 25, 1979, Pat. No. 4,314,278, which is a continuation-in-part of Ser. No. 22,505, Mar. 21, 1979, Pat. No. 4,225,886, which is a continuation-in-part of Ser. No. 851,812, Nov. 16, 1977, Pat. No. 4,152,696. This application Jan. 5, 1983, Ser. No. 458,131

Int. Cl.[4] H04N *7/18*

U.S. Cl. 358—210 **14 Claims**



1. A system for selecting sectors of rotation of a camera that are contained within predetermined angular limits of rotation of the camera comprising:

(a) a camera;

(b) rotating means for rotating the camera within and between the predetermined angular limits of rotation;

(c) reversing means for causing the direction of rotation of the camera to reverse when the camera reaches one of the predetermined angular limits;

(d) means for selectively limiting the rotation of the camera to anyone of a plurality of different sectors contained within the predetermined angular limits, the means for selectively limiting rotation permitting the selection of any one of the plurality of different sectors within the predetermined angular limits of rotation; and

(e) each sector being defined by a pair of reversing-switching means, the reversing-switching means being located at the limits of rotation and at one or more points located between the limits of rotation.

4,543,610

SOLID-STATE IMAGING DEVICE INCLUDING NOISE SUBTRACTION WITH POLARITY CONTROL

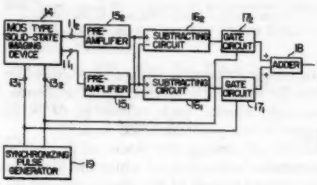
Naoki Ozawa, Kokubunji; Shusaku Nagahara, Hachioji; Kenji Takahashi, Kodaira; Iwao Takemoto, Tokyo; Shigeki Nishizawa, Mobara; Masanori Sato, and Satoshi Suzuki, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1983, Ser. No. 518,699

Claims priority, application Japan, Sep. 20, 1982, 57-164498

Int. Cl.[4] H04N *3/14, 5/21*

U.S. Cl. 358—213 **8 Claims**



1. A solid-state imaging device comprising:

a plurality of light-sensitive picture elements regularly disposed in an array in horizontal and vertical directions;

a plurality of first vertical transfer means connected to those of said light-sensitive picture elements which are arrayed on odd-numbered rows and for transferring first charges in the vertical column direction;

first signal output means connected to said plurality of first vertical transfer means and for outputting said first charges;

a plurality of second vertical transfer means connected to those of said light-sensitive picture elements which are arrayed on even-numbered rows and for transferring second charges in the vertical direction;

second signal output means connected to said plurality of second vertical transfer means and for outputting said second charges;

switch means for transferring light-signal charges generated by said light-sensitive picture elements into corresponding ones of said first and said second vertical transfer means;

vertical scan means for controlling said switch means for enabling selective reading from the picture elements for each row;

horizontal transfer means for transferring said first and said second charges stored on said first and said second vertical transfer means into said first and said second signal output means concurrently;

first subtraction means for subtracting the output of said second signal output means from the output of said first signal output means;

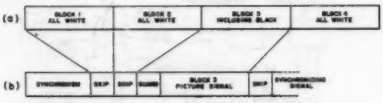
second subtraction means for subtracting the output of said first signal output means from the output of said second signal output means; and

output selection means for selecting the output of said first subtraction means when said vertical scan means controls said switch means for the odd-numbered rows and for selecting the output of said second subtraction means when said vertical scan means controls said switch means for the even-numbered rows.

4,543,611
METHOD AND AN APPARATUS FOR IMAGE PROCESSING

Sadasuke Kurahayashi, Niiza, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 309,075, Oct. 6, 1981, abandoned. This application Oct. 24, 1983, Ser. No. 544,805
Claims priority, application Japan, Oct. 29, 1980, 55-150647
Int. Cl.⁴ H04N 7/12
U.S. Cl. 358—260 12 Claims



1. An image processing apparatus comprising:

means for dividing a picture signal sequence of a scanning line into blocks, each consisting of N picture signals, where N is a predetermined number;

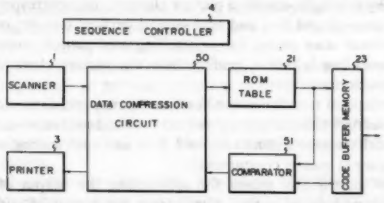
means for processing the blocks of N picture signals to be transmitted according to white and black data comprising the picture signals of the blocks formed by said dividing means, wherein an l-bit synchronizing signal is generated to precede transmission of the picture signals of each scanning line, an n-bit skip signal is generated to replace the picture signals for each block containing only white data, where $1<n<N$, and an m-bit guard band signal, where m is a predetermined number, is generated to precede transmission of the picture signals for each said block containing black data, and wherein said skip signal and the picture signals for a block containing black data are generated in the same sequence as the corresponding picture signals in said scanning line and said guard band signal is generated for transmission only at a time that is immediately before a picture signal block containing black data and immediately after said skip signal; and

means for modulating and transmitting the processed signals without phase information.

4,543,612
FACSIMILE SYSTEM

Shigeo Matsunaga, Yokohama; Yoshio Iizuka, Sagamihara, and Tadaaki Suzuki, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 27, 1982, Ser. No. 453,100
Claims priority, application Japan, Dec. 29, 1981, 56-213573
Int. Cl.⁴ H04N 1/41
U.S. Cl. 358—261 6 Claims



1. A facsimile system in which data compression is performed upon line data as a result of scanning picture elements in a transmitter side and in which compressed data is reproduced in a receiver side, comprising:

a data compression circuit for generating a run length as a result of the scanning of the picture elements, said data compression circuit comprising:

at least one line memory for storing the line data;

transition detecting means, operatively connected to said line memory, for detecting the white-to-black or black-to-white transitions in the line data stored in said at least one line memory; and

run-length counting means, operatively connected to said transition detecting means, for counting a run length between adjacent transitions in dependence upon the output signals of said transition detecting means;

a ROM table, operatively connected to said data compression circuit, for coding the run length generated by said data compression circuit into compressed data;

a code buffer memory, operatively connected to said ROM table, for storing the compressed data;

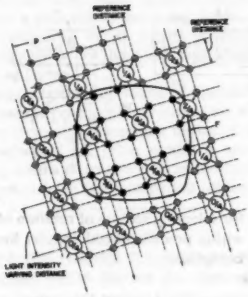
comparing means, operatively connected to said ROM table and said code buffer memory, for comparing the compressed data output by said code buffer memory; and

sequence control means, operatively connected to said data compression circuit, for controlling said run-length counting means by supplying a sequential data signal thereto so as to generate a sequence of run-lengths, the reproduced data being simultaneously obtained by supplying the sequential data signal to said at least one line memory until said comparing means detects a match as a result of comparing two kinds of said compressed data.

4,543,613
METHOD FOR PRODUCING HALFTONE DOTS IN A HALFTONE PLATE RECORDING APPARATUS

Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kukyoto, Japan

Filed Oct. 20, 1983, Ser. No. 543,911
Claims priority, application Japan, Oct. 28, 1982, 57-188144
Int. Cl.⁴ H04N 1/22; G01D 15/14
U.S. Cl. 358—298 4 Claims



1. A method for producing halftone dots in a halftone plate recording apparatus in which a photosensitive material is scanned by using a plurality of exposure light beams, and a plurality of minute points are exposed in lattice-like arrangement within halftone dot areas of a halftone plate to be recorded characterized by comprising the following steps:

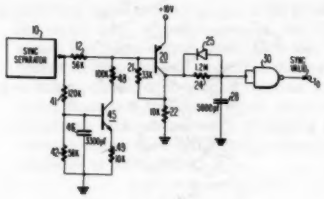
gradually reducing distribution of the quantity of exposure light beams which are used for recording said minute dots from the center to the periphery thereof; and

controlling the intensity of exposure light beams on said plurality of minute dots depending on the degree of conformity of said minute dots or the pattern of their arrangement with said halftone dot areas.

4,543,614
VIDEO SYNC VALIDITY DETECTOR

Keming J. Chen, San Diego, Calif., assignor to RCA Corporaton, Princeton, N.J.

Filed Jan. 23, 1984, Ser. No. 573,228
Int. Cl.[4] H04N *5/44, 5/08, 7/02*
U.S. Cl. 358—193.1 **8 Claims**

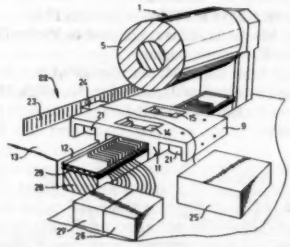


1. In a system for processing a video signal including an image synchronizing component, apparatus comprising:
an output terminal;
a sync signal separator responsive to said video signal for providing at an output signals including a separated synchronizing component;
a peak detector circuit responsive to output signals from said sync separator including said synchronizing component and having an output coupled to said output terminal; and
an average detector circuit responsive to output signals from said sync separator and having an output coupled to said output terminal.

4,543,615
AUTOMATIC SCANNING DEVICE AND ITS CONTROL FOR OPTO-MECHANICAL PROCESSING APPLICATIONS

Jan Van Campenhout, Grimbergen; Hans de Stecker, Lochristi; Paul Notredame, Wondelgem; Eddy Muyle, Pittem; Jean-Paul Bergmans, Merelbeke, and Patrick Bergmans, Zwijnaarde, all of Belgium, assignors to Digitized Information Systems Corp., n.v., Ghent, Belgium

Filed Jun. 6, 1983, Ser. No. 501,152
Claims priority, application Luxembourg, Jun. 4, 1982, 84183
Int. Cl.[4] H04N *1/04*
U.S. Cl. 358—285 **25 Claims**

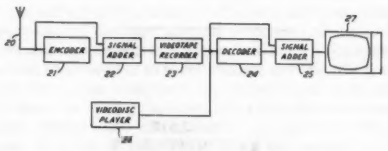


1. An automatic scanning device for the opto-mechanical processing of a substrate covered with photo-sensitive material, by means of optical components supported by a carriage moving along a rectilinear guide, comprising:
a light source generating a light beam;
optical means mounted on said carriage for guiding the beam generated by the source onto said substrate;
control means;
a position measuring device coupled to determine the position of the carriage and to provide such position information to the control means;
a magnet coupled to the carriage; and
a linear motor comprising a winding, composed of a number of isolated conductors, attached to said rectilinear guide orthogonally to the longitudinal axis of said guide, and connected to said control means through a controllable current source, and a solid-state commutator coupled to magnetically propel the carriage in a controlled fashion in accordance with current supplied to the winding from said controllable current source based on instructions from said control means.

4,543,616
VIDEO RECORDING AND DISPLAY EQUIPMENT

David Brooks, Enfield, England, assignor to Thorn EMI Ferguson Limited, London, England

Filed May 5, 1982, Ser. No. 375,315
Claims priority, application United Kingdom, May 7, 1981, 8114014; Jun. 26, 1981, 8119860
Int. Cl.[4] H04N *5/92*
U.S. Cl. 358—335 **7 Claims**



1. Video recording equipment comprising:
means to receive a composite signal having standard video information and teletext data, the teletext data occupying a predetermined number A of television line periods in the field blanking period of the standard video information;
a signal encoder;
means in the encoder, to separate out teletext data from a received composite signal;
means, in the encoder, to reduce the rate of the teletext data from its value at the reception means;
adding means, in the encoder, to combine the output of the receiving means and the output of the rate-reducing means in order to insert the reduced rate teletext data in a number, corresponding to $N \times A$ (where $N > 1$), of line periods in the field blanking period of the composite signal;
means to record the combined signal output from the mixing means.

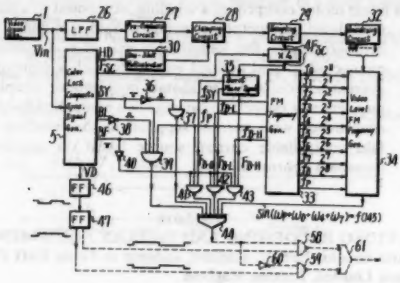
4,543,617
RECORDING APPARATUS

Yoshikazu Kobayashi, Kawasaki, Japan, assignor to Nippon Columbia Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1982, Ser. No. 395,979
Claims priority, application Japan, Jul. 15, 1981, 56-110361
Int. Cl.[4] H04N *5/92*
U.S. Cl. 358—342 **7 Claims**

1. A recording apparatus for recording a recording signal, which includes synchronizing signals having equal intervals, therebetween, on a disc comprising:
signal generating means for generating a plurality of signals with frequencies synchronized in phase with said synchronizing signals;
selecting means for selecting signals with frequencies, corresponding to the respective levels of said recording signal, from said plurality of signals to provide a frequency-modulated signal;
means for synchronizing the rotation of said disc, on which said recording signal is recorded, with said synchronizing signal to thereby rotate said disc at a constant angular

velocity and at a constant speed being a whole multiple of the period of said synchronizing signal; and a means for



recording the output from said selecting means on said rotating disc.

4,543,618

TAPE RECORDER

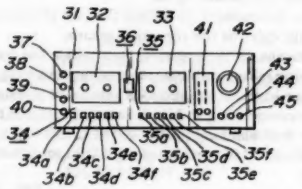
Masaaki Sato, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,399

Claims priority, application Japan, Sep. 24, 1981, 56-150882; Sep. 24, 1981, 56-150883

Int. Cl.[4] G11B *5/86, 15/12*

U.S. Cl. 360—15 **14 Claims**



1. A tape recorder comprising a tape recorder housing, a pair of tape drive mechanisms in the housing, first reproducing operation means for effecting reproduction with one tape drive mechanism, recording operation means for effecting recording in the other tape drive mechanism, second reproducing operation means for effecting reproduction with the other tape drive mechanism; mode change means coupled to each of the tape drive mechanisms and each of said operation means for effecting recording or reproducing operations with at least one of said mechanisms and one of said operation means; and dubbing means coupled to said mode change means for simultaneously actuating said first reproducing operation means and said one tape drive mechanism as well as the recording operation means and the second reproducing operation means along with the other tape drive mechanism; said dubbing means includes manually operable members coupled to the first and second reproducing operation means and said recording means, and close enough to each other to actuate said first and second reproducing operation means and said recording means simultaneously with a single manual push.

4,543,619

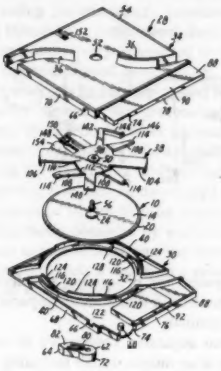
MAGNETIC DISK CARTRIDGE AND DISK DRIVE

Sheldon L. Pastor, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 30, 1982, Ser. No. 430,819

Int. Cl.[4] G11B *5/012, 23/02, 15/04, 19/04*

U.S. Cl. 360—97 **18 Claims**



1. A cartridge and disk assembly for use in combination with a disk drive mechanism, the cartridge and disk assembly comprising:

a first shell including a perimetrical wall and defining a disk access aperture;

a second shell including a perimetrical wall corresponding to said first shell wall and defining a disk access slot, said shells mating at said walls to define an interior volume;

a recording disk disposed within said volume and including a circular sealing surface for engagement with said first shell adjacent said aperture; and

rotatable locking means disposed between said disk and said second shell for selectively preventing movement of said disk with respect to said shells and releasing said disk, said locking means comprising flexible arm means movable between a first position adjacent the second shell and a second position adjacent said disk for urging said disk sealing surface into engagement with said first shell and maintaining said engagement.

4,543,620

CODE GENERATING APPARATUS

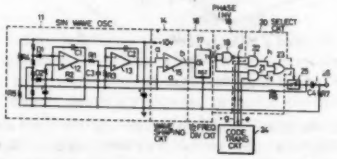
Tomohiro Mori, Maebashi, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Mar. 13, 1984, Ser. No. 589,124

Claims priority, application Japan, Mar. 16, 1983, 58-43731

Int. Cl.[4] G11B *5/09*

U.S. Cl. 360—49 **6 Claims**



1. A code generating apparatus comprising:

an oscillator for continuously producing a sinusoidal wave which has a constant frequency;

a square wave generating circuit supplied with the output sinusoidal wave of said oscillator, for generating first and

second square waves having a period which is twice the period of said sinusoidal wave, said first and second square waves having mutually inverted phases;

a code transmitting circuit pre-stored with a code which is to be generated, as a bit sequence, for alternately transmitting through first and second output terminals thereof said bit sequence in terms of one bit in phase with said first or second square wave;

a switching signal producing circuit for producing a switching signal from a combination of said first and second square waves and output signals from said first and second output terminals of said code transmitting circuit; and

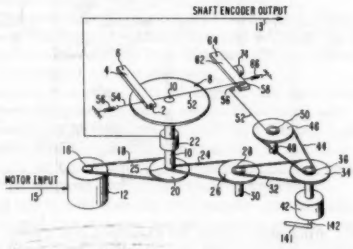
a switching circuit controlled in response to said switching signal from said switching signal producing circuit, for selectively and intermittently producing through a code output terminal thereof the output sinusoidal wave of said oscillator as the code.

4,543,621

SPIRAL TRACK DISK DRIVE

Charles A. Lindberg, Menlo Park; William R. Maclay, Los Gatos, and Lauren V. Merritt, Los Altos, all of Calif., assignors to Datacopy Corporation, Mountain View, Calif.

Filed Jun. 10, 1982, Ser. No. 386,862
Int. Cl.⁴ G11B 5/52, 5/58
U.S. Cl. 360—77 **8 Claims**



1. A disk drive for recording and reproducing information in a single-spiral, magnetically-recorded data track on the surface of a disk, comprising:

a record/playback arm including a transducer for recording and reproducing data signals with respect to said disk;

first-moving means for moving said record/playback arm such that said transducer is moved generally along a radius of said surface of said disk, between the rim of said disk and the center of said disk;

second-moving means for spinning said disk;

control means, coupled to said first-moving means and to said second-moving means, for coordinating the motion of said first-moving means and said second-moving means so that said transducer traces a spiral pattern across said surface of said disk;

said first-moving means including a cable, one end of said cable being wound around a drum, the other end of said cable being connected to said record/playback arm, such that as said drum is turned said cable is wound or unwound therefrom to thereby cause said record/playback arm to move across said disk toward or away from said center of said disk;

dithering means coupled to said cable between said record/playback arm and said drum for providing a relatively high-frequency, low-amplitude oscillation of said cable to thereby impart a similar oscillation to said transducer in a direction which is orthogonal to said data track; and,

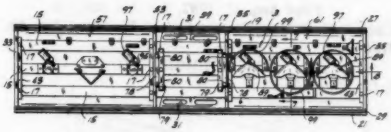
means coupled to said transducer and to said dithering means for utilizing said data signals reproduced by said transducer from said recorded data track to maintain said transducer on the center of said recorded-data track as said transducer is moved across said surface of said disk.

4,543,622

LIGHT BAR FOR EMERGENCY VEHICLES

W. Kenneth Menke, Glendale, and Danny C. Jincks, Annapolis, both of Mo., assignors to Public Safety Equipment, Inc., St. Louis, Mo.

Filed Oct. 4, 1984, Ser. No. 657,493
Int. Cl.⁴ B60Q 1/46
U.S. Cl. 362—219 **39 Claims**



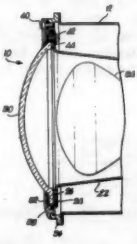
1. A light bar for emergency vehicles comprising a relatively thin flat elongate base adapted for mounting thereon a plurality of electrical and mechanical components such as lamps, a siren and the circuitry therefor, an array of holes in the base extending lengthwise of the base adapted to receive fasteners for mounting said components on the base, said holes being of such number and so arrayed as to accommodate any one of a multiplicity of component configurations, sealing means on the base over the holes for sealing the holes, and a plurality of fasteners threadable through said sealing means into specific holes in said array of holes for fastening selected components to the base in a predetermined configuration, the other holes in the array remaining sealed by said sealing means.

4,543,623

NON-STAINING UNDERWATER LIGHT ASSEMBLY FOR POOLS

Gordon F. Ehret, Alhambra, Calif., assignor to Sta-Rite Industries, Inc., Milwaukee, Wis.

Filed May 29, 1984, Ser. No. 614,953
Int. Cl.⁴ F21V 29/00
U.S. Cl. 362—267 **8 Claims**



1. In an underwater lighting assembly having a housing adapted to be mounted in the wall of the structure for confining a body of water containing a significant quantity of a chlorine compound, said housing being provided with an opening for light rays to illuminate the area of the water surrounding the assembly and a translucent lens removably mounted on the housing in closing relationship to said opening, the combination with said housing and lens of:

a gasket configured to close the space between the housing and the lens and provide a water tight seal therebetween,

said gasket being positioned such that it is in contact with the water confined by said structure when in its operative water sealing disposition,

the gasket being fabricated of a synthetic elastomeric mate-

rial which is resistant to deterioration over long periods of exposure to water containing a chlorine compound,

said material being devoid of a coloring agent such as carbon black which is subject to leaching from the gasket when exposed over a time period to a chlorine compound bearing quantity of water.

4,543,624

UNITARY ELECTRICAL PLUG WITH MULTIPLE INLETS AND VOLTAGE CONVERTER

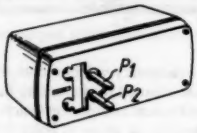
Clive S. Rumble, London, England, assignor to Corabelment A.G., Vaduz, Liechtenstein

Filed Aug. 17, 1982, Ser. No. 408,770

Claims priority, application United Kingdom, Jan. 18, 1982, 8201337

Int. Cl.⁴ H02M *1/00*

U.S. Cl. 363—146 **4 Claims**



1. An electrical connecting device comprising a unitary housing, an adapter in the housing with a multiplicity of electrical contact pins retractable into the housing and extendable in a plurality of arrays each suitable for an electrical power supply, an electrical outlet for an electrical plug, and intermediate the adapter and the electrical outlet an electrical voltage converter.

4,543,625

METHOD FOR COMPENSATING FOR SERVO DELAY CAUSED AT AN ARC OR CORNER

Ryoichiro Nozawa, Tokyo; Hideaki Kawamura, and Takao Sasaki, both of Hachioji, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

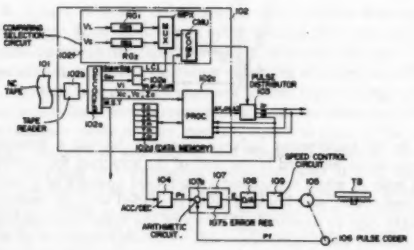
PCT No. PCT/JP82/00343, § 371 Date Apr. 27, 1983, § 102(e) Date Apr. 27, 1983, PCT Pub. No. WO83/00755, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 27, 1982, Ser. No. 491,333

Claims priority, application Japan, Aug. 27, 1981, 56-134774

Int. Cl.⁴ G05B *19/42, 19/24*

U.S. Cl. 364—169 **4 Claims**



1. A numerical control method for executing numerical control processing based on a machining program having plural items of command data, the numerical control processing being executed based on an item of command data which has been preread, comprising the steps of:

(a) computing and storing beforehand at least two upper limit feed speeds corresponding to first and second interpolation modes, based on an allowable machining error;

(b) selecting one of the upper limit feed speeds based on the one of the first and second interpolation modes corresponding to the shape into which a workpiece is to be machined;

(c) comparing the magnitude of the selected upper limit feed speed and the magnitude of a commanded feed speed; and

(d) clamping the actual feed speed to the selected upper limit feed speed when the commanded feed speed becomes greater than the selected upper limit feed speed.

4,543,626

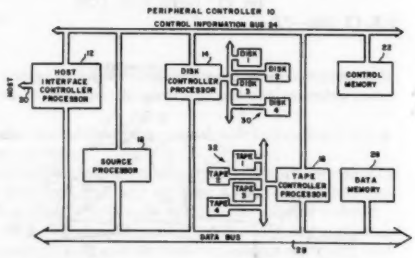
APPARATUS AND METHOD FOR CONTROLLING DIGITAL DATA PROCESSING SYSTEM EMPLOYING MULTIPLE PROCESSORS

Robert Bean; Edward A. Gardner; Michael Chow; Barry L. Rubinson; Richard F. Lary, and Robert Blackledge, all of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 6, 1982, Ser. No. 447,228

Int. Cl.⁴ G06F *13/00*

U.S. Cl. 364—200 **49 Claims**



1. A data processing system for executing commands, each command requiring a plurality of sequentially-performed operations, comprising memory means, source processor means and a plurality of stations;

A. said memory means for storing a route for each command, each route comprising a sequence of route vectors each including an operation specifying portion identifying an operation to be performed in partial execution of the command and a station specifying portion identifying a station for performing the identified operation;

B. source processor means comprising

(1) means connected to said memory means for generating, in response to a command, a control block containing a pointer identifying the first route vector in the route associated with the command; and

(2) control block transmitting means connected to said generating means and to all of said stations for coupling the generated control block to the station to process the first route in the route vector;

C. each station comprising:

(1) work queue means connected to said control block transmitting means and to said other stations for receiving and storing control blocks in a queue;

(2) means connected to said work queue means for sequentially retrieving the control blocks from said work queue means;

(3) processing means connected to said retrieving means and to said memory means for retrieving the route vector from said memory means identified by the pointer in the retrieved control block and for performing the operation specified by the vector; and

(4) transfer means connected to said processing means and to the k queue means of the other stations for advancing the route vector pointer in the control block to identify

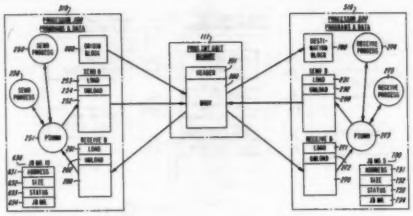
the next route vector in the route and for transferring the control block to the work queue means of the station that is to execute the route vector identified by the route vector pointer.

4,543,627

INTERNAL COMMUNICATION ARRANGEMENT FOR A MULTIPROCESSOR SYSTEM

Thomas F. Schwab, Lisle, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 14, 1981, Ser. No. 330,171
Int. Cl.⁴ G06F *15/16, 3/04*
U.S. Cl. 364—200 **8 Claims**



1. A multiprocessing system comprising:

a first processor for generating first data messages and having first memory means for storing said first data messages at locations defined by a first load address indicator and a first unload address indicator;

a second processor for receiving said first data messages and having second memory means for storing said first data messages at locations defined by a second load address indicator and a second unload address indicator; and

means for controlling the transmission of data between said first and said second processor comprising:

first and second memory data transfer controllers connected to said first and said second memory means, respectively, and responsive to read and write control signals for reading from and writing into said connected memory means, and an interface processor, interposed between said first and said second memory data transfer controllers, for detecting a change in said first load address indicator, and for generating said read control signals to cause said first memory data transfer controller to read said first data messages from said first memory means at locations defined by said first load address indicator and for generating said write control signals to cause said first memory data transfer controller to modify said first unload address indicator to alter a limit of the locations in which said first processor can store new data messages and for generating said write control signals to cause said second memory data transfer controller to write said first data messages into said second memory means at locations defined by said second load address indicator and to modify said second load address indicator after said first data messages have been stored in said second memory means.

4,543,628

BUS FOR DATA PROCESSING SYSTEM WITH FAULT CYCLE OPERATION

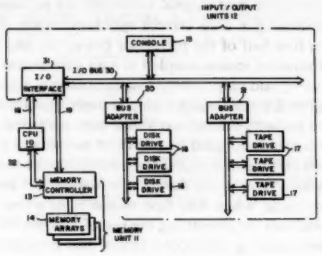
Stephen T. Pomfret, Maynard, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 28, 1983, Ser. No. 461,838
Int. Cl.⁴ G06F *13/00, 11/00*
U.S. Cl. 364—200 **9 Claims**

1. An input/output interface unit for engaging in fault cycle operations, said interface unit being for attachment to a data processing system including a plurality of units interconnected by a bus, the bus including lines for transferring information signals including signals representing commands, addresses and data, lines for transferring unit identification signals, and lines for transmitting a confirmation signal indi,cating that the information signals had been received, said interface unit comprising:

(A) means for connection to said information signal transfer lines and the confirmation signal lines for receiving information signals from the bus, said information signal receiving means including means for transmitting a confirmation signal indicating receipt of the information signals;

(B) means connected to said information signal receiving means for processing the command and address signals received from said information signal receiving means;



(C) means connected to said processing means for determining whether an error has occurred during processing of command and address signals following transmission of a confirmation signal; and

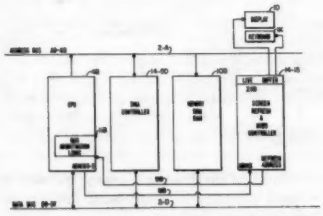
(D) means connected to said error detection means and for connection to said information signal transfer lines for transmitting predetermined data signals over the information signal transfer lines to the unit that transmitted the command and address signals, to thereby indicate that it is unable to process the command.

4,543,629

APPARATUS FOR MAXIMIZING BUS UTILIZATION

Richard A. Carey, Ashland, and Jerry Falk, Medway, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 372,909, Apr. 29, 1982, abandoned.
This application Jan. 14, 1985, Ser. No. 690,836
Int. Cl.⁴ G06F *3/04*
U.S. Cl. 364—200 **7 Claims**



1. In an interactive computer terminal system having various subsystems, each subsystem communicating with each other by time-sharing a common bus, each subsystem requesting and being alloted on a priority basis a predetermined amount of time or bus cycle to use the bus, said predetermined amount of time being of different duration from each subsystem, said interactive computer terminal system comprising:

(a) first means in one of said subsystems coupled to said bus for requesting a memory refresh bus cycle;

(b) second means in another of said subsystems also coupled

to said bus for requesting a processor bus cycle and wherein said processor bus cycle is made of a first half processor bus cycle equivalent to said memory refresh bus cycle and a second half processor bus cycle also equivalent to said memory refresh bus cycle;

(c) third means coupled to said first and second means for permitting concurrent access to said bus for said first and second means so that both said processor bus cycle and said memory refresh bus can be performed concurrently and said memory refresh bus cycle is to begin concurrently with the beginning of said processor bus cycle, wherein said third means includes gate means responsive to an address latch enable signal which strobes a CPU address bus and a signal indicating the processor cycle for generating a chip refresh synchronization signal during the first half of the processor bus cycle, and bus decoder arbitration means coupled to said gate means and responsive to said chip refresh synchronization signal and other inputs for generating a chip refresh signal indicating that the memory refresh cycle has been awarded; and

fourth means coupled to said third means and responsive to said chip refresh signal for permitting the use of said bus by said first means during the first half of said processor bus cycle when said first means is in a first operational state, and for permitting the use of said bus by said second means during the second half of said processor bus cycle.

4,543,630

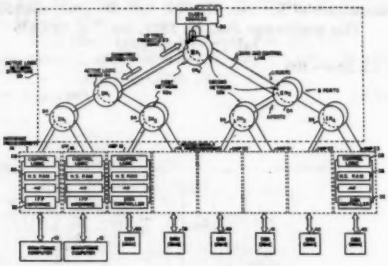
DATA PROCESSING SYSTEMS AND METHODS

Philip M. Neches, Pasadena, Calif., assignor to Teradata Corporation, Los Angeles, Calif.

Division of Ser. No. 250,094, Apr. 1, 1981, Pat. No. 4,445,171. This application Apr. 19, 1984, Ser. No. 601,808

Int. Cl.⁴ G06F *3/04, 7/00, 15/20*

U.S. Cl. 364—200 **28 Claims**



1. The method of processing message packets at different processors in a plurality of processors interconnected by a network including the steps of:

coupling message packets from the processors concurrently into the network;

determining within the network at least one of the coupled message packets which has a priority dependent on data content of the coupled message packets which priority is not exceeded by any other message packet; and

presenting a highest priority message packet to all processors simultaneously for processing thereat the highest priority message packet containing the data of the at least one message packet that is determined to have priority.

4,543,631

JAPANESE TEXT INPUTTING SYSTEM HAVING INTERACTIVE MNEUMONIC MODE AND DISPLAY CHOICE MODE

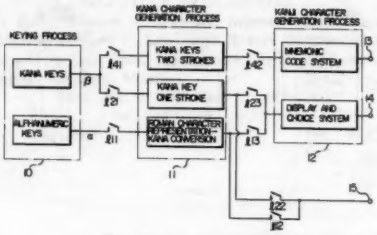
Masaaki Kurosu, Chofu; Takeshi Nakayama, Tokyo; Akira Nakajima, Tokyo, and Yoshimitsu Ohshima, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,611

Claims priority, application Japan, Sep. 22, 1980, 55-130719

Int. Cl.⁴ G06F *3/02, 3/14, 15/38*

U.S. Cl. 364—200 **16 Claims**



1. A text inputting device for inputting text to an information processing system comprising:

(a) first means for inputting a string of characters of a first kind which designates a character of a second kind to be inputted to the information processing system in order to generate codes for the inputted string;

(b) second means for generating in a first mode a code of the character of the second kind, including display means responsive to the codes from said first means for displaying candidate characters of the second kind which have a phonetic relationship to the text designated by the character string of the first kind, and operator-operable selection means for selecting one of the displayed candidate characters of the second kind to provide a code for said selected character of the second kind to said information processing system;

(c) third means for generating in a second mode a code of a character of the second kind corresponding to the character string from said first means, wherein the character string is uniquely and predeterminedly assigned to the character of the second kind as a mnemonic code to provide the generated code of the character of the second kind to said information processing system;

(d) fourth means for selecting either said first or second mode by alternatively connecting either said second or said third means to said first means, said fourth means being operated by the operator; and

(e) fifth means cooperatively coupled to said second means for representing to the operator the mnemonic code of the character of the second kind selected by said operator-operable means to the operator,

wherein in inputting a text to said information processing system, when a character of the second kind of which the mnemonic code is not known by the operator appears in the text, said fourth means is activated to enable said second means to operate in said first mode,

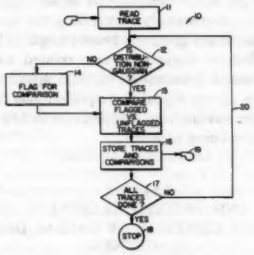
and when a character of the second kind of which the mnemonic code is known by the operator appears in the text, said fourth means is selectively activated to enable said third means to operate in said second mode.

4,543,632

ROBUST ESTIMATION METHOD FOR DETERMINING WHEN SUBSEQUENT DATA PROCESSING CAN INCLUDE SIGN-BIT REPRESENTATIONS OF FULL-WAVEFORM SEISMIC TRACES

Raymond A. Ergas, Laguna Beach, and Francis Muir, Laguna Niguel, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jan. 10, 1983, Ser. No. 457,082
Int. Cl.[4] G01V *1/30, 1/36*
U.S. Cl. 364—421 **11 Claims**



1. A robust method of examining field traces **T0, T1, T2 . . . T** associated with a collection survey providing N fold subsurface common depth point coverage of an earth formation, to determine if sign-clipped versions of said traces **T0 . . . T** can be used in generating cross-correlation estimates in subsequent seismic processing irrespective of the fact that full-waveform versions of said traces **T0 . . . T** are available for such processing:

(i) determining a time window i for examining each trace **T0 . . . T**, said window defining a trace segment thereof containing a plurality of sample points associated with a dependent variable that varies as a function of one or more independent variables;

(ii) determining skewness of said dependent variable of said trace **T0 . . . T** as a function of said one or more independent variables, over said time window i one trace-at-a-time;

(iii) comparing said determined skewness of step (ii) with a Gaussian distribution of said same variable as a function of said same one or more independent variables; and

(iv) if said skewness of step (iii) deviates substantially from that of said Gaussian distribution, sign clipping said trace **T0 . . . T** over at least said window i wherein a resulting sign-clipped version can be used in generating cross-correlation estimates in a subsequent seismic processing method within undue loss in accuracy, said substantial deviation of said skewness of step (ii) from that of said Gaussian distribution being such as to define a shift in magnitude of the peak independent variable of at least 50% from that associated with said Gaussian distribution.

5. A robust method of editing field traces **T0, T1, T2 . . . T** associated with a large multichannel seismic collection survey collecting M channels of data per collection cycle so as to provide N fold subsurface common depth point coverage of an earth formation using part sign-clipped versions of said traces **T0 . . . T** without need of either full trace examination along the full-time scale of said trace, or without examination of adjacent traces associated with each trace **T0 . . . T**, comprising:

(i) determining a time window for examining each trace **T0 . . . T**, said window defining a full-wave trace segment thereof containing a plurality of sample points defining a signal-to-noise ratio below unity and being associated with a dependent variable that varies as a function of one or more independent variables;

(ii) sign clipping said independent variable associated with said full-wave trace segment over said time window i thereby forming a sign-clipped version thereof;

(iii) generating a series of statistical functions including cross-correlation estimates **F1 . . . F** associated with said sign-clipped independent variable of step (ii) over said time window i for said trace **T0 . . . T**;

(iv) comparing said generated statistical functions of step (iii) with a series of similar values associated with a standard trace which experience indicates if the limits thereof are exceeded, is unacceptable for further processing; and

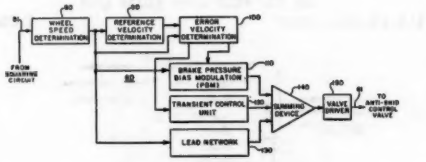
(v) if said generated limits of step (iv) exceed said standard limits of said standard trace, removing said trace from further seismic processing, said removal occurring without the need of examining other time segments of said trace and without examining adjacent traces associated with said trace **T0 . . . T**.

4,543,633

MODULATOR FOR ANTI-SKID BRAKING SYSTEM

Robert D. Cook, Valencia, Calif., assignor to Crane Co., Chicago, Ill.

Continuation-in-part of Ser. No. 147,385, May 7, 1980, Pat. No. 4,338,668. This application Jul. 1, 1982, Ser. No. 394,483
Int. Cl.[4] B60T *8/02;* **G06F** *15/20*
U.S. Cl. 364—426 **21 Claims**



1. In an anti-skid braking system for modifying the action of a brake application means for a braked wheel of a vehicle, said system including means for utilizing information obtained from the rotation of said wheel to generate an input signal indicative of a braking condition; modulator means, responsive to the input signal, for generating a modulated brake control signal; and means, responsive to the modulated brake control signal, for modifying the action of the brake application means; the improvement comprising:

means, included in the modulator means, for generating a rate signal, said rate signal including a non-linear function of the input signal such that the change in the rate signal for a selected change in the input signal varies as a freely selectable function of the magnitude of the input signal; and

means, included in the modulator means, for generating the modulated brake control signal as a time integral function of the rate signal;

the magnitude of the rate signal being asymmetrical with respect to the polarity of the input signal, and the non-linear function being chosen to promote effective control of the action of the brake application means.

11. In an anti-skid braking system for modifying the action of a brake application means for a braked wheel of a vehicle; said system including means for utilizing information obtained from the rotation of said wheel to generate an input signal indictive of a braking condition; means for generating a threshold signal; and means, responsive to a modulated brake control signal, for modifying the action of the brake application means, the improvement comprising:

a computer;

means, included in the computer, for storing a plurality of rate signals;

means, included in the computer, for algebraically combining the threshold signal and the input signal to form a summation signal;

means, included in the computer, for selecting one of the plurality of rate signals in response to the amplitude of the

summation signal, said selected rate signal varying as a non-linear function of the summation signal such that the ratio between the selected rate signal and the summation signal when the summation signal is in a first range of values is greater than the ratio between the selected rate signal and the summation signal when the summation signal is in a second range of values, distinct from the first range of values; and

means, included in the computer, for generating the modulated brake control signal as a time integral function of the selected one of the plurality of rate signals;

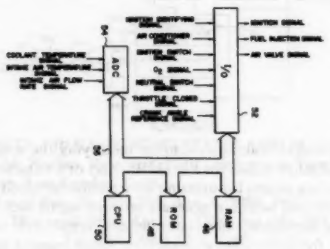
said non-linear function being an asymmetrical function with respect to the polarity of the summation signal such that the magnitude of the selected rate signal is asymmetrical with respect to the polarity of the summation signal, said non-linear function being chosen to match the determination of the time integral function to the vehicle and the braked wheel to promote effective control of the action of the brake application means.

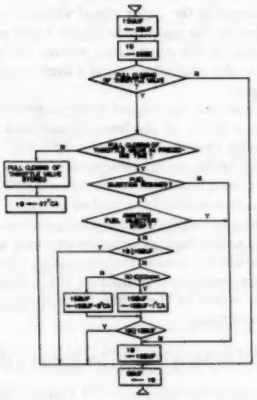
4,543,634

ELECTRONIC ENGINE CONTROL SYSTEM

Nobuyuki Kobayashi; Hiroshi Ito, and Yoichi Sugiura, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 12, 1982, Ser. No. 407,543
Claims priority, application Japan, Aug. 13, 1981, 56-126882
Int. Cl.[4] F02P *5/06*; F02M *3/06*
U.S. Cl. 364—431.07 **8 Claims**





1. An electronic engine control system with a fuel injector and an igniter for controlling the ignition timing of an engine, comprising:

throttle valve closing detecting means for detecting the full closing of a throttle valve of the engine and outputting a throttle closed signal in response thereto;

engine rotational speed detecting means for detecting an engine rotational speed and outputting a speed signal; and

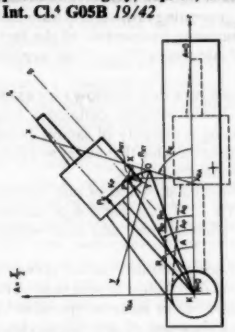
control means for: (1) controlling ignition timing of the engine to an optimum ignition advance angle related to engine rotational speed and intake air flow rate of the engine when said throttle closed signal is not outputted, (2) controlling ignition timing to a maximum fixed ignition advance angle when said throttle closed signal is outputted, and (3) progressively controlling the ignition timing from the maximum ignition advance angle to the optimum ignition advance angle at a rate related to the engine rotational speed determined by said speed signal when said throttle closed signal is outputted and fuel injection resumes after having been stopped due to detection of said throttle valve being closed.

4,543,635

PROCESS AND SWITCHING CIRCUIT FOR THE POSITIONAL CONTROL OF RADIAL DRILLING MACHINES

István Joó; Lajos Schütz; József Sárosi; Sándor P. Szabó; János Taál, and Ottó Szebenyi, all of Budapest, Hungary, assignors to Csepel Muvek Szerszamgepgyara, Budapest, Hungary

Filed Sep. 9, 1982, Ser. No. 416,106
Claims priority, application Hungary, Sep. 14, 1981, 2647/81
Int. Cl.[4] G05B *19/42*
U.S. Cl. 364—474 **12 Claims**



1. Position control system for a radial drilling tool machine with a drill spindle having a centerpoint P, a carriage beam having a center of rotation K, said system comprising:

(a) means for storing a control and arithmetic program to be performed, said control and arithmetic program including programmed mathematic formulae for determining a desired position of the center point P of a drilling spindle in relation to predetermined base points of a workpiece in a rectangular coordinate system employing the following relationships:

$$R_p = \sqrt{R^2 + K_p^2} \tag{1}$$

$$A_p = A - \operatorname{arctg} \frac{K}{R} P \tag{2}$$

(3)

$$R_{xy} = \sqrt{/R_p \cdot \cos A_p - R_o \cdot \cos A_o/^2 + /R_p \cdot \sin A_p - R_o \cdot \sin A_o/^2}$$

$$A_{xy} = \operatorname{arctg} \frac{R_p \cdot \sin A_p - R_o \cdot \sin A_o}{R_p \cdot \cos A_p - R_o \cdot \cos A_o} - A_x \tag{4}$$

$$X = R_{xy} \cdot \cos A_{xy} \tag{5}$$

-continued

$$Y = R_{xy} \cdot \sin A_{xy} \quad (6)$$

wherein: the value of R is measured from the center of rotation K of the carriage beam; a magnitude of an angular coordinate A is measured from a base position of a straight line r_k of the carriage beam;

r_p=a straight path swept by the center point of the drill spindle during the movement of the drill carriage on the carriage beam;

r_k=a straight line parallel with the straight line r_p and passing through the point of rotation of the carriage beam;

K_p=a distance between the parallel straight lines r_k and r_p;

R_p=a radial coordinate value of the centerpoint of the drill spindle;

A_p=an angular coordinate value of the centerpoint of the drill spindle;

R_o=a radial coordinate value of the origin;

A_o=an angular coordinate value of the origin;

R_{xy}=a length of the vector pointing from the origin to the centerpoint of the drill spindle;

A_{xy}=an angle of the vector pointing from the origin to the centerpoint of the drill spindle with respect to the X axis;

X=an x coordinate value of the centerpoint of the drill spindle;

Y=a y coordinate value of the centerpoint of the drill spindle;

said drilling spindle being actuated in a radial coordinate system given by an axle of rotation of a carriage beam and a base straight line crossing said axle of rotation, said carriage beam having a straight line guiding path for said drilling spindle parallel to a straight line crossing the axle of rotation,

(b) means for storing a processing program to be performed in order to actuate said drilling spindle for preparing bores in predetermined points of the workpiece,

(c) means for measuring a relative position of said drilling spindle to said base straight line and said axle of rotation and generating measurement signals corresponding to the actual position of said drilling spindle,

(d) means for testing a plurality of switching, controlling and regulating elements of the radial drilling tool machine, said testing means generating status signals, and

(e) means for controlling said plurality of switching, controlling and regulating means, said controlling means generating actuating signal wherein, said control and arithmetic program storing means, said processing program storing means, said relative position measuring means and said testing means are coupled by address lines, data lines and control lines with means for processing said programs, measurement and status signals, determining the relative position of said drilling spindle and generating control signals for said controlling means.

4,543,636

NUMERICALLY CONTROLLED MACHINE TOOL SYSTEM CAPABLE OF SETTING UP TOOLS INTO TOOL MAGAZINE

Shigeo Noda, Nagoya; Yasuhiro Yamashita, Okazaki, and Kosei Imamura, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 4, 1983, Ser. No. 463,808

Claims priority, application Japan, Feb. 19, 1982, 57-26663

Int. Cl.⁴ G06F *15/46*; G05B *19/18*

U.S. Cl. 364—474 **6 Claims**

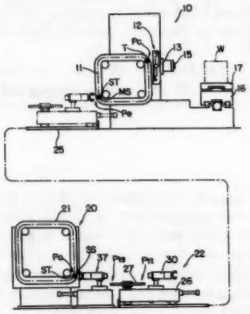
1. A numerically controlled machine tool system wherein a first group of dedicated tools which are stored in a tool magazine are replaced with a second group of dedicated tools in connection with a change in kind between a first lot of workpieces currently in machining and a second lot of workpieces next to be machined, said system comprising:

a machine tool having said tool magazine for selectively storing said first and second groups of said dedicated tool in addition to other tools commonly used in machining said first and second lots of said workpieces, said tool magazine being capable of presenting any one of said tools stored therein to a magazine tool replacing position;

tool supply means for supplying to the vicinity of said tool magazine said second group of said dedicated tools subsequently used in machining said second lot of said workpieces;

tool replacing means for replacing one of said second group of said dedicated tools in the vicinity of said tool magazine with one of said first group of said dedicated tools at said magazine tool replacing position;

data storage means for storing data relating to kinds of said first and second lots of said workpieces and also relating to said first and second groups of said dedicated tools;



replacement instructing means responsive to said data stored in said data storage means for outputting replacing command data each time each of said first group of said dedicated tools becomes unnecessary for machining a last one of said first lot of said workpieces;

magazine control means responsive to said replacing command data output by said replacement instructing means for controlling said tool magazine to present to said magazine tool replacing position each of said first group of said dedicated tools whose replacement is instructed by said replacing command data during the machining of said last one of said first lot of said workpiece; and

replacement control means operable each time said tool magazine presents each of said first group of said dedicated tools to said magazine tool replacing position for controlling said tool replacing means to replace said each of said first group of said dedicated tools at said magazine tool replacing position with one of said second group of said dedicated tools in the vicinity of said tool magazine during said machining of said last one of said first lot of said workpieces.

4,543,637

GENERATION OF A SET POINT FOR PROCESS CONTROL

Dexter E. Smith, William S. Steward and Gary L. Funk, all of Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 16, 1982, Ser. No. 399,109

Int. Cl.⁴ G06G *7/58*

U.S. Cl. 364—500 **8 Claims**

1. Apparatus comprising:

means for establishing a first signal representative of the actual value of a first process variable;

means for establishing a second signal representative of the desired value for said first process variable;

means for subtracting said second signal from said first signal to establish a third signal representative of the difference between said first signal and said second signal;

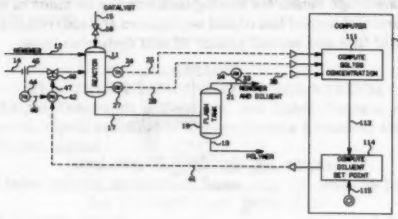
means for multiplying said third signal by a proportionality constant to establish a fourth signal representative of a proportional term;

means for integrating said third signal to establish the integral of said third signal as a function of time;

means for multiplying the integral of said third signal as a function of time by an integral constant to establish a fifth signal representative of an integral term;

means for determining if the magnitude of said third signal is greater than or less than zero;

means for establishing a sixth signal representative of a power term, wherein said power term has a magnitude



equal to said third signal raised to a first power with the result being multiplied by first a power constant if the magnitude of said third signal is greater than zero and wherein said power term has a magnitude equal to said third signal raised to a second power with the result being multiplied by a second power constant if the magnitude of said third signal is less than zero;

means for establishing a seventh signal which is equal to at least the sum of the magnitudes of said fourth, fifth and sixth signals, wherein said seventh signal is the set point for a second process variable which will maintain the actual value of said first process variable substantially equal to the desired value represented by said second signal; and

means for manipulating said second process variable in response to said seventh signal.

4,543,638

MECHANICAL HANDLING APPARATUS

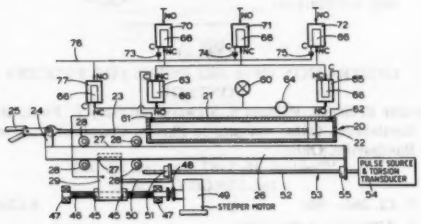
Michael F. Scarffe, Milton Keynes, England, assignor to V.S. Engineering Ltd., Luton, England

Filed Sep. 3, 1982, Ser. No. 414,815

Claims priority, application United Kingdom, Sep. 23, 1981, 8128694

Int. Cl.[4] G05B *15/02*

U.S. Cl. 364—513 **39 Claims**



1. An improved mechanical handling apparatus for point to point movement comprising:

an arm assembly having a utilization device affixed to an end thereof and including actuation means for moving said utilization device toward a desired point;

transducer means operatively associated with said arm assembly for generating a position signal indicative of the position of said utilization device relative to a datum;

brake means operatively associated with said arm assembly for selectably preventing relative movement between said brake means and said utilization device;

vernier adjustment means connected to said brake means for moving said brake means relative to said datum over a predetermined limited range;

control means programmed to control the movement of said utilization device to said desired point in accordance with said position signal by energizing said actuation means if required to bring said utilization device within said predetermined limited range of said desired point, actuating said brake means to prevent relative movement between said utilization device and said brake means, and energizing said vernier adjustment means to accurately position said utilization device at said desired point.

4,543,639

INDUSTRIAL ROBOT CONTROL METHOD

Hajimu Inaba, Hino, and Shinsuke Sakakibara, Komae, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

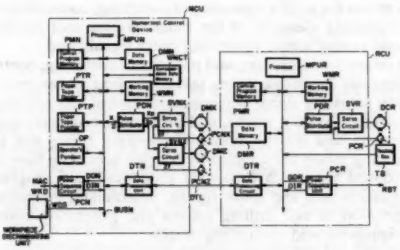
PCT No. PCT/JP82/00304, § 371 Date Mar. 25, 1983, § 102(e) Date Mar. 25, 1983, PCT Pub. No. WO83/00572, PCT Pub. Date Feb. 17, 1983

PCT Filed Aug. 4, 1982, Ser. No. 485,123

Claims priority, application Japan, Aug. 4, 1981, 56-122015

Int. Cl.[4] G06F *15/46; G05B 19/18, 19/42*

U.S. Cl. 364—513 **10 Claims**



1. An industrial robot control method for use in a system having a machine tool, a numerical control device for controlling the machine tool, an industrial robot and a robot control device for controlling the industrial robot under one of a plurality of robot control programs, comprising the steps of:

(a) storing the plurality of robot control programs in the robot control device;

(b) automatically generating a robot control program selection signal under the control of the numerical control device; and

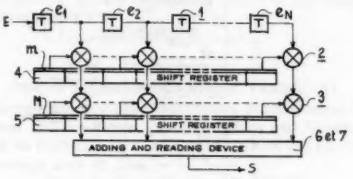
(c) executing robot service processing, under the control of the robot control device, based on a selected one of the robot control programs corresponding to the robot control program selection signal.

4,543,640

ANALOG-TO-DIGITAL CORRELATOR WITH PROGRAMMABLE COEFFICIENTS WITH VALUES OF +1, −1 OR 0

Jean-Louis Coutures, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 27, 1982, Ser. No. 424,745
Claims priority, application France, Apr. 20, 1982, 82 06756
Int. Cl.⁴ G06J *1/00*; G06G *7/19*
U.S. Cl. 364—604 **8 Claims**



1. An analog-to-digital correlator, with programmable correlation coefficients with values of +1, −1, or 0, which comprises:

a multi-stage analog charge-transfer shift register (1) receiving samples of an input analog signal (E) for correlation, each stage (e) thereof including at least one reading electrode;

means (2) for multiplying by +1 or 0 the signal at the output from each stage (e) of the charge-transfer register;

means (3) for multiplying by +1 or −1 the output signal, from each stage of the charge-transfer register, not cancelled by said means for multiplying by +1 or 0,

said means (3) for multiplying by +1 or −1 comprising two parallel charge-reading tracks, one of said tracks being connected to the positive input of said differential amplifier, and the other of said tracks being connected to the negative input of said amplifier,;

two shift registers (4, 5) with programmable digital outputs with values of 0 or 1, the respective outputs of the two shift registers being connected to two memories (m, M),

one (m) of said memories controlling said means (2) for multiplying by +1 or 0, and the other (M) of said memories controlling said means (3) of multiplying by +1 or −1,

said digital-output registers (4, 5) selectively controlling outputs of said charge-reading tracks to one of two conditions, reading or blocking of reading;

a differential amplifier (8) having a positive input and a negative input;

means (6) for algebraic adding of output signals of said respective means for multiplying, and

means (7) for reading charges, so as to obtain an electric output signal (S) from the correlator, said means for reading charges comprising:

a first group of metal-oxide-semiconductor (MOS) transistors connected, on each reading track, on the one hand, to the reading electrode of each stage (e) of the analog register (1), and, on the other hand, to one of said inputs of said differential amplifier (8);

a pair of capacitors, each being connected between ground and a respective input of said differential amplifier (8);

a control circuit connected to each differential amplifier input, responsible for charging said capacitor and for saturation of said first group of MOS transistors, before arrival of charges to be read beneath the reading electrodes, the capacitor potential being left floating during arrival of charges;

a second group of MOS transistors connected between the reading electrode of each stage of said analog register and a reference potential, said transistors blocking reading during intervals when quantities of charge for reading are not beneath the reading electrodes;

said (2) means for multiplying by +1 or 0 comprising:

a third group of MOS transistors, connected by their collectors and sources between the reading electrode of each stage of the charge-transfer shift register and the reference potential, said transistor being controlled by signals delivered by memories connected to one of the digital-output registers;

said means (3) for multiplying by +1 or −1 comprising:

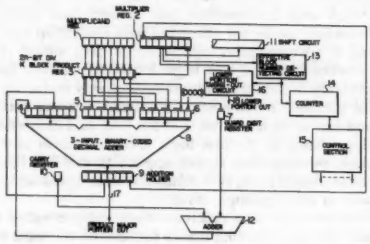
a fourth group of MOS transistors, connected in series by their collectors and emitters with said first group of MOS transistors, their gates being controlled by signals delivered by memories connected to one of said digital-output registers.

4,543,641

MULTIPLICATION DEVICE USING MULTIPLE-INPUT ADDER

Masaharu Fukuta; Yoshio Oshima; Sako Ishikawa, and Toru Ohtsuki, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,257
Claims priority, application Japan, Jan. 29, 1982, 57-11626
Int. Cl.⁴ G06F *7/52*
U.S. Cl. 364—756 **6 Claims**



1. A multiplier device comprising:

(a) multiplicand register means for storing an input multiplicand;

(b) multiplier register means for storing an input multiplier;

(c) block product means connected to receive the outputs of said multiplicand register means and said multiplier register means for dividing the multiplicand from the multiplicand register means at intervals of n-bits from the least significant bit of the multiplicand into a plurality of n bit blocks, and for multiplying each of said plurality of n bit blocks by m bits of the multiplier from said multiplier register means to produce a plurality of block products each consisting of (n+m) bits, wherein n and m are integers equal to or greater than 2;

(d) block product grouping means connected to the output of said block product means for grouping said plurality of block products into a plurality of groups each consisting of respective alternate ones of said plurality of block products form said block product means;

(e) adding means including a multi-input binary-coded decimal adder connected to receive said plurality of groups of block products from the output of said block product grouping means at plural inputs thereof for adding said plurality of groups of block products to each other; and

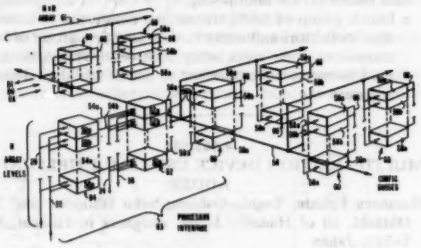
(f) addition hold means for temporarily retaining the result of the adding operation by said adding means to provide the result of multiplication, said adding means having one of said said multi-inputs connected to receive the output of said addition hold means to produce an accumulated addition result, thereby allowing addition of the accumulated addition result with the contents of said plural inputs.

4,543,642

DATA EXCHANGE SUBSYSTEM FOR USE IN A MODULAR ARRAY PROCESSOR

Siegfried Hansen, Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jan. 26, 1982, Ser. No. 342,640
Int. Cl.⁴ G06F *15/16, 13/00*
U.S. Cl. 364—900 **5 Claims**



1. A synchronous data bus system comprising:
(a) a conductive bus line;
(b) a plurality of synchronous data sources;
(c) a plurality of data transmitters electrically coupled in common to said bus line, each said transmitter being associated with a respective one of said data sources and including means for receiving data therefrom and applying a corresponding synchronous data signal, varying between high and low logic levels, to said bus line, said plurality of data transmitters collectively including means for effecting a composite data signal, varying being high and low logic levels, on said bus line, said composite data signal being at the low logic level whenever any of the corresponding data signals applied to said bus line are at the low logic level, said composite data signal being otherwise at the high logic level;
(d) one or more data receivers electrically coupled to said bus line and including means for sensing the logic level of said composite data signal and generating data corresponding thereto; and
(e) a plurality of transmitter inhibit signal sources, each being associated with a respective one of said transmitters so as to allow the provision of a transmitter inhibit signal thereto, the application of the corresponding data signal to said bus line being inhibited in response to the provision of the inhibit signal to its respective one of said data transmitters and the application of an inactive transmitter signal, constant at the high logic level, to said bus line for the duration of the provision of the inhibit signal.

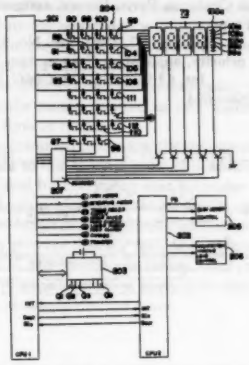
4,543,643

COPYING MAGNIFICATION SETTING DEVICE FOR AN ELECTROPHOTOGRAPHIC COPYING APPARATUS

Kenji Shibazaki, Aichi; Yutaka Irie, Toyokawa; Masazumi Ito, Toyokawa, and Tomoji Murata, Toyokawa, all of Japan, assignors to Minolta Camera, Osaka, Japan

Filed May 27, 1983, Ser. No. 498,885
Claims priority, application Japan, May 28, 1982, 57-91877; Nov. 25, 1982, 57-206444; Nov. 29, 1982, 57-209845; Feb. 10, 1983, 58-20833; Mar. 8, 1983, 58-38743
Int. Cl.⁴ G06F *1/00*
U.S. Cl. 364—900 **27 Claims**

1. A device for setting a copying magnification in an electrophotographic copying apparatus, said device comprising:
means for manually inputting a numerical value;
a data storage means having a plurality of memory locations;
selection key means for selecting one of said plurality of memory locations; and
control means for storing a numerical value input by said numerical value input means in one of said memory locations selected by said selection key means, said control means setting an operation mode of said copying apparatus such that a numerical value stored in one of said memory locations selected by said selection key means corresponds to a copying magnification value.

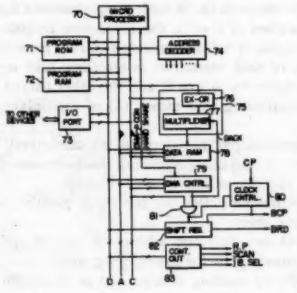


4,543,644

CONTROL CIRCUIT FOR MATRIX-DRIVEN RECORDING

Yasuyuki Kozima; Kunio Sato; Masaharu Tadauchi, all of Hitachi; Hiroshi Suehiro, and Yasuo Inoue, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,245
Claims priority, application Japan, Sep. 11, 1981, 56-142277
Int. Cl.⁴ G06F *3/00*
U.S. Cl. 364—900 **3 Claims**



1. A control circuit for matrix drive recording comprising:
a microprocessor;
an address bus and a data bus;
a random access memory connected to said microprocessor through said address and data buses;
a multiplexer circuit having a first address input connected to said address bus to receive a first address and a second address input connected to receive a second address and having an address output connected to said random access memory for changing over said first and second addresses to said random access memory;
an exclusive OR circuit having a plurality of two-input exclusive OR gates, each output of which is connected to supply a predetermined input address bit of said second address from said address bus to said multiplexer circuit, one of the two inputs of said plurality of exclusive OR

gates being connected to receive one among a plurality of bits of said address bus and the other of said two inputs being connected to receive a respective one of the other bits of said address bus;

a shift register connected to said data bus for inputting parallel data from said random access memory and for shifting the data sequentially to provide the data in series; and

a direct memory access controller connected to said address bus for controlling data transfer from said random access memory to said shift register and for providing an acknowledge signal to said multiplexer to control the change over of said multiplexer circuit at the time of said data transfer.

4,543,645

POINT MEMORY GRAPHIC TERMINAL

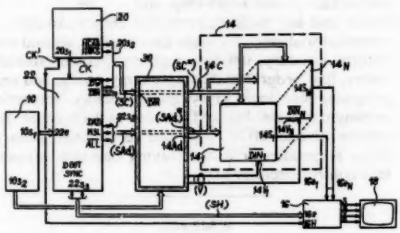
Jean-Pierre Vigarié , 32 Rue des Tilleuls, 35510 Cesson, France, assignor to Jean-Pierre Vigarié , Cesson and Etablissement Public de Diffusion dit "TELEDIFFUSION DE FRANCE" , Montrouge, both of, France

Filed Nov. 1, 1983, Ser. No. 547,778

Claims priority, application France, Nov. 4, 1982, 82 18492

Int. Cl.⁴ G06F *3/14*

U.S. Cl. 364—900 **3 Claims**



1. An image memory graphic terminal of the type comprising:

- an image memory (**14**) constitutes by N memory planes (**14**$_1$ . . . **14**$_N$), N being an integer at least equal to 1, each plane incorporating a matrix system of memory points, each able to store one bit, each point being defined by an address, the N bits of N points having the same address in the N planes defining a word V of N bits, said memory having an addressing input (**14Ad**) common to N planes, a control input (**14C**) common to N planes, N validation inputs (**14V**$_1$ . . . **14V**$_N$) and having N binary outputs (**14S**$_1$ . . **14S***N*);
- a sequencer (**20**) having a clock output (**20***s*$_1$) and control outputs (**20***s*$_2$);
- a graphic display processor (**22**) having an input (**22***e*), a first group of outputs (**22***s*$_1$) associated with the outputs (**20***s*$_2$) of the sequencer supplying control signals (SC) defining an access cycle to the memory, a second group of outputs (**22***s*$_2$) supplying address signals (SAd), a third group of outputs (**22***s*$_3$) supplying clock and synchronization signals;
- a video signal generator (**16**) having N binary inputs (**16***e*$_1$ . . . **16***e*$_N$) connected to N binary outputs of the image memory (**14**), a synchronization input (**16***e*) connected to the third group of outputs (**22***s*$_3$) of the graphic display processor (**22**) and a clock input (**16H**) connected to the clock output (**20***s*$_1$) of sequencer (**20**) and having an output (**16***s*) supplying video and synchronization signals;
- a video display receiver (**18**) connected to the video signal generator (**16**);
- a management microcomputer (**10**) having a first group of outputs (**10***s*$_1$) connected to the input (**22***e*) of the graphic display processor and a second group of outputs (**10***s*$_2$), characterized in that the terminal also comprises a system (**30**) for writing or recording in the image memory image texture signals, said system comprising:

(A) - a circuit (**40**) for processing the access cycle to the image memory, said circuit incorporating:

(A$_1$) - a circuit (**41**) for the transmission, with a time lag, of the signals for controlling the access cycle to the memory, said circuit having a first input (**41***e*$_1$) connected to the second group of outputs (**20***s*$_2$) of sequencer (**20**) and (**22***s*$_1$) of the graphic display processor (**22**) and receiving control signals (SC), a second input (**41***e*$_2$) connected to the second group of outputs (**22***s*$_2$) of the graphic display processor (**22**) and receiving address signals (SAd), a first output (**41***s*$_1$) supplying control signals delayed by a fixed time (Sc*) and a second output (**41***s*$_2$) supplying address signals delayed by the same time (SAd*), the first output (**31***s*$_1$) being connected to the control inputs (**14C**$_1$ . . . **14C**$_N$) of the image memory (**14**) and the second output (**41***s*$_2$) to the addressing inputs (**14Ad**$_1$ . . . **14Ad**$_N$) of said image memory;

(A$_2$) - a shaping circuit (**42**), which has an input (**42***e*) connected to the second group of outputs (**22***s*$_2$) of the graphic display processor (**22**), from where it receives address signals (SAd) and an output (**42***s*) supplying signals (x, y) representing coordinates in the planes of the image memory of the point having the address applied to input (**42***e*);

(B) - a circuit (**50**) for the determination of the word (V) to be written into the memory, incorporating:

(B$_1$) - an operation parametrization circuit (**53**), which has an input (**53***e*) connected to the second group of outputs (**102**$_2$) of microcomputer (**10**) and receiving from the latter signals defining the operating procedures of the system and having a first output (**53***s*$_1$) supplying 8 signals, respectively ΔX, ΔY, ΔH, ΔV, off$_x$, off$_y$, E, L, defining a repetitive pattern corresponding to a particular image texture, a second output (**53***s*$_2$) supplying signals selecting the pattern to be used in the texture to be displayed, a third output (**53***s*$_3$) supplying signals (V_F, modes) defining one operating mode from among several (with or without a pattern, uniform or transparent background);

(B$_2$) - a computing circuit (**54**) having a first input (**54***e*$_1$) connected to the output (**42***s*) of the shaping circuit (**42**) and receiving signals (x, y) and a second input (**54***e*$_2$) connected to the first output (**53***s*$_1$) of the parametrization circuit (**53**) and receiving the 8 signals supplied by said outputs and having first and second outputs (**54***s*$_1$, **54***s*$_2$), said computing circuit (**54**) being able to:

- calculate two coordinates α^* and β^* from addresses x, y and signals ΔX, ΔY, ΔH, ΔV, off$_x$, off$_y$ by the following relations:

$$\alpha^* = (x + \text{off}_x) - \frac{(y + \text{off}_y)}{\Delta Y}\,\Delta H \qquad (1)$$

$$\beta^* = (y + \text{off}_y) - \frac{(x + \text{off}_x)}{\Delta X}\,\Delta V \qquad (1')$$

- determine whether α^* is positive or zero, in which case the circuit calculates a relative coordinate α equal to α^* modulo ΔX, if not the circuit calculates α by:

$$[\Delta X - (|\alpha^*| \text{modulo } \Delta X)] \text{modulo } \Delta X,$$

in which $|\alpha^*|$ represents the absolute value of α^*,

determine if β^* is positive or zero, in which case the circuit calculates a coordinate β equal to β^* modulo ΔY, if not the circuit calculates a relative coordinate β by:

$$[\Delta Y - (|\beta^*| \text{modulo } \Delta Y)] \text{modulo } \Delta Y$$

in which $|\beta^*|$ represents the absolute value of β^*,

supply at its first output (**54***s*$_1$) coordinates α and β,

determine its coordinate α is lower than E and, simultaneously, whether coordinate β is lower than L;

supply on its second output (**54***s*$_2$) a signal (DANS) deter-

mining whether the preceding condition is or is not satisfied;

(B_3) - a pattern memory circuit (**55**), constituted by memories containing information defining different types of pattern and, for each type, several patterns, said circuit incorporating a control input (**55**e_1) connected to the first output (**54**s_1) of computing circuit (**54**) and receiving the relative coordinates (α,β), a second selection input (**55**e_2) connected to the second output (**53**s_2) of the operation parametrization circuit (**53**), said input (**55**e_2) receiving selection signals (CHOIX) of one pattern from among several, a third input (**55**e_3) connected to output (**10**s_2) of computer (**10**) and receiving loading signals, and an output (**55**s) supplying a signal (V_M), which can be written into the image memory for the selected pattern;

(B_4) - a configuration selection circuit (**56**), which has a first input (**56**e_1) connected to the third output (**53**s_3) of the operation parametrization circuit (**53**) and which receives signals (V_F, modes) determining an operating mode, a second input (**56**e_2) connected to the output (**55**s) of the pattern memory circuit (**55**) and receiving the signal (V_M), a third input (**56**e_3) connected to the second output (**54**s_2) of the computing circuit (**54**) and receiving the signal (DANS), a fourth input (**56**e_4) connected to the first output (**41**s_1) of the memory cycle transmission circuit (**41**) and receiving the delayed controlled signal (SC*), said circuit (**56**) being able, as a function of the signal (DANS) and the signal determining the operating mode, to validate the control cycle (SC*) and determine, as a function of the signal V_M the word with N bits (V) to be written into the image memory, said circuit having a first group of outputs (**56**s_1) connected to the control input (**14**C) of the image memory and supplying signals controlling the writing into the memory, and a second group of outputs (**56**s_2) connected to the N validation inputs (**14**V_1 . . . **14**V_N) of the image memory and supplying the word (V) to be written into said memory.

4,543,646

CHIP TOPOGRAPHY FOR MOS DATA ENCRYPTION STANDARD CIRCUIT

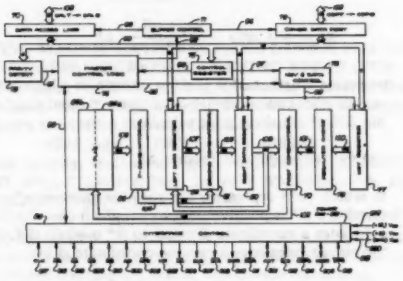
William H. Ambrosius, III, Mission Viejo, and Larry D. Rossean, Santa Ana, both of Calif., assignors to Western Digital Corporation, Newport Beach, Calif.

Filed Jun. 5, 1980, Ser. No. 156,594

The portion of the term of this patent subsequent to Sep. 24, 2000, has been disclaimed.

Int. Cl.[4] **G06F** *1/00*

U.S. Cl. 364—900 **7 Claims**



1. A metal-oxide-semiconductor (MOS) chip for a Data Encryption Standard (DES) circuit implementing a preselected data encryption algorithm, comprising:

(a) control circuitry adapted to be coupled to external circuitry by means of external signal lines presenting signals to and receiving signals from said external circuitry, for regulating the function of said DES circuit;

(b) a key register coupled to said control circuitry, for storing a user-supplied keyword;

(c) permuted choice circuitry coupled to said key register;

(d) first combinatorial circuitry coupled to said permuted choice circuitry;

(e) a right data register coupled to said first combinatorial circuitry and to said control circuitry, for storing data to be encrypted or decrypted;

(f) second combinatorial circuitry coupled to said right data register;

(g) a left data register coupled to said second combinatorial circuitry, to said right data register, and to said control circuitry, for storing data to be encrypted or decrypted;

(h) P-combinatorial circuitry coupled to said second combinatorial circuitry;

(i) a first programmable logic array group coupled to said first combinatorial circuitry and to said P-combinatorial circuitry; and

(j) a second programmable logic array group coupled to said first combinatorial circuitry, to said P-combinatorial circuitry, and to said first programmable logic array group;

wherein substantially all of said control circuitry is disposed within a substantially rectangular control circuitry area on the surface of said MOS chip; and

wherein said key register, permuted choice circuitry, first combinatorial circuitry, right data register, second combinatorial circuitry, left data register, P-combinatorial circuitry, first programmable logic array group, and second programmable logic array group occupy, respectively, rectangular areas disposed parallel to each other on the surface of said MOS chip, said rectangular areas each being perpendicular to and having one side adjacent to said control circuitry area.

4,543,647

ELECTRICALLY PROGRAMMABLE NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

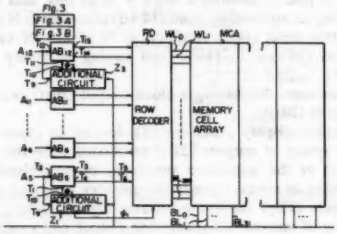
Masanobu Yoshida, Kawaguchi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1981, Ser. No. 333,926

Claims priority, application Japan, Dec. 23, 1980, 55-182289; Dec. 23, 1980, 55-182294

Int. Cl.[4] **G11C** *11/40*

U.S. Cl. 365—201 **11 Claims**



1. An electrically programmable non-volatile semiconductor memory device, comprising:

a plurality of word lines;

a plurality of bit lines;

a decoder operatively connected to said word lines and/or said bit lines;

cell transistors each having a control gate connected to one of said word lines, a drain connected to one of said bit lines, a source connected to one of a voltage terminal and a floating gate for storing an electric charge therein;

an input circuit having an active state and a power down mode, and operatively connected to said bit lines for inputting a write signal to the cell transistors;

at least one control circuit, operatively connected to said decoder, for placing at a test time, all of said word lines and/or all of said bit lines in a selected state at the same time and said input circuit in the active state; and

power down means, operatively connected to said decoder and said input circuit, for placing said decoder and said input circuit in the power down mode at a power down time.

4,543,648

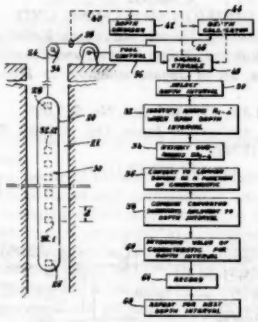
SHOT TO SHOT PROCESSING FOR MEASURING A CHARACTERISTIC OF EARTH FORMATIONS FROM INSIDE A BOREHOLE

Kai Hsu, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 29, 1983, Ser. No. 566,631

Int. Cl.[4] G01V *1/28*; G06F *15/20*

U.S. Cl. 367—29 **44 Claims**



1. A method for measuring a characteristic of earth formations penetrated by a borehole from investigative energy generated by a source located on a tool which is moved along the borehole and where the energy is detected along an aperture as defined by a plurality of receiver locations spaced along the direction of the borehole axis of the tool and wherein signals are generated respectively representative of the energy detected at said locations, comprising the steps of:

selecting a depth interval which is less in length than said aperture;

identifying signals relevant to the selected depth interval and including signals generated as a result of different times of operation of the source;

converting different sub-arrays of identified signals to a common domain of signals representing values of a coherence between the signals in a respective sub-array as a function of values of said characteristic;

combining converted signals of effectively common characteristic values in a preselected manner to determine at least one value for said characteristic for that depth interval;

repeating said steps for different depth intervals; and

forming a tangible record as a function of borehole depth from the determined values of the characteristic.

4,543,649

SYSTEM FOR ULTRASONICALLY DETECTING THE RELATIVE POSITION OF A MOVEABLE DEVICE

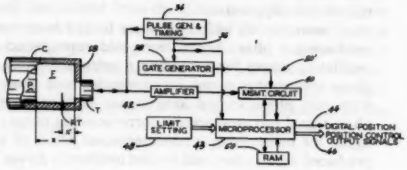
Kenneth O. Head, and Arthur E. Bollinger, both of Kirkwood, Mo., assignors to Teknar, Inc., St. Louis, Mo.

Filed Oct. 17, 1983, Ser. No. 542,696

Int. Cl.[4] G01S *15/88*, *7/52*

U.S. Cl. 367—96 **8 Claims**

1. For use with a fluid cylinder, an ultrasonic system for accurately detecting the relative position of a piston moveable within the fluid cylinder, said system comprising the piston having a surface for reflecting ultrasonic signals, and a reference target within the cylinder for also reflecting ultransonic signals, an ultrasonic transducer for transmitting ultrasonic signals from a location fixed within the structure both to the piston and to the reference target for reflection thereby and for picking up the reflected ultrasonic signals, circuit means responsive to a first time interval between the transmitted and picked up signals for generating an electrical output signal



which is a function of the position of the piston within the structure relative to the transducer, said circuit means also being responsive to a further time interval between the transmitted signals and those picked up after reflection by the reference target, and means for causing the output signal to be corrected as a function of the ratio between the first and further time intervals and correcting means including a microprocessor for causing the output signal to be corrected as a function of at least one parameter characteristic of said fluid which is subject to change causing error of the output signal.

4,543,650

SERVO SYSTEM INCLUDING VELOCITY AND PHASE SERVO CIRCUITS FOR DIGITAL AUDIO RECORD DISC REPRODUCING APPARATUS

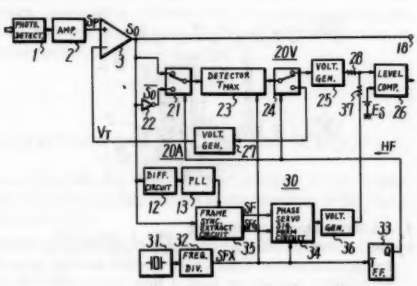
Shigeaki Wachi, Higashikurume, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 26, 1982, Ser. No. 362,502

Claims priority, application Japan, Mar. 26, 1981, 56-45239

Int. Cl.[4] G11B *7/00*, *7/02*

U.S. Cl. 369—43 **19 Claims**



1. In an apparatus for reproducing from a record medium a recorded PCM signal in a run length limited code; the combination of

transducer means for providing a reproduced signal from the record medium as the latter is driven;

means for comparing said reproduced signal with a first reference signal so as to produce an output signal corresponding to said reproduced signal and having portions of opposite polarities;

a detecting circuit for detecting a transition interval between transitions from one to the other of said opposite polarity portions of said output signal and for producing a corresponding detecting signal;

a velocity servo circuit including velocity comparator means for comparing said detecting signal with a second reference signal which corresponds to a predetermined limit of said transition interval when the record medium is driven at a predetermined velocity and producing a corresponding velocity control signal for maintaining the record medium at said predetermined velocity, and a first time constant circuit connected to said velocity comparator means for determining the rate of response of said velocity servo circuit to any deviation from said predetermined velocity; and

a phase servo circuit including phase locked loop means for producing a phase signal from said reproduced signal, oscillating means for providing a reference phase signal, phase comparator means for comparing said phase signal from said phase locked loop means with said reference phase signal and producing a corresponding phase control signal for maintaining a predetermined phase of said reproduced signal when said record medium is driven at said predetermined velocity, and a second time constant circuit connected to said phase comparator means for determining the rate of response of said phase servo circuit to any deviation from said predetermined phase and having a time constant smaller than that of said first time constant circuit.

4,543,651

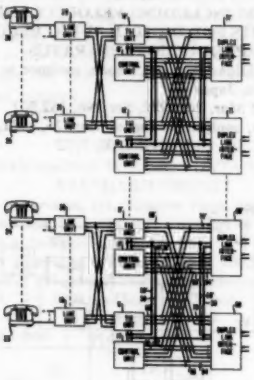
DUPLICATED TIME DIVISION SWITCHING SYSTEM

Shih-Jeh Chang, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 12, 1983, Ser. No. 531,485

Int. Cl.[4] H04J *1/16, 3/14*

U.S. Cl. 370—16 **26 Claims**



1. An arrangement comprising

means for transmitting digital words comprising an information portion and an error check portion derived from that information portion on both a first communication path and a second communication path,

storage means for storing a selection signal defining one of said first and second communication paths,

means for receiving digital words from said first and second communication paths and

means responsive to a first digital word received from the one of said first and second communication paths defined by the selection signal stored by said storage means and responsive to a second digital word received from the one of said first and second communication paths not defined by the selection signal stored by said storage means, for transmitting said first digital word to a third communication path unless the error check portion of said first digital word cannot be derived from the information portion of said first digital word and the error check portion of said second digital word can be derived from the information portion of said second digital word, and transmitting said second digital word to said third communication path when the error check portion of said first digital word cannot be derived from the information portion of said first digital word and the error check portion of said second digital word can be derived from the information portion of said second digital word.

4,543,652

TIME-DIVISION SWITCHING UNIT

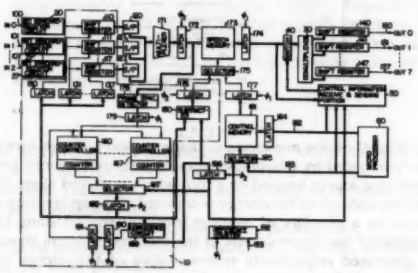
Eiichi Amada, Kokubunji; Hiroshi Kuwahara, Kodaira; Hirotoshi Shirasu, Yokohama; Taihei Suzuki, and Takashi Morita, both of Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,697

Claims priority, application Japan, Oct. 4, 1982, 57-173219; Oct. 27, 1982, 57-187429

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—66 **15 Claims**



1. A time-division switching unit for writing into first memory means signals of a plurality of input highways including time-division multiplexed signals of a plurality of channels in one frame and connecting a desired channel of a desired one of said plurality of input highways to a desired channel of a desired one of a plurality of output highways by controlling write and read addresses to said first memory means, comprising:

(a) a plurality of bit synchronization circuits provided one for each of said plurality of input highways;

(b) multiplexer means for multiplexing outputs of said bit synchronization circuits;

(c) address control means for controlling addresses to write and read the output of said multiplexer means to and from said first memory means;

(d) distribution means for distributing signals read from said first memory means to said plurality of output highways;

(e) frame synchronization signal detecting means for detecting a frame synchronization signal of the input highway from the input of said first memory means; and

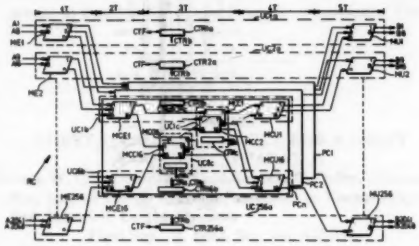
(f) a frame synchronization circuit for modifying the write address determined by said address control means in accordance with the output of said frame synchronization signal detecting means and variably delaying the signals of said input highways within a range of one channel period.

4,543,653

MODULAR SELF-ROUTING PCM SWITCHING NETWORK FOR DISTRIBUTED-CONTROL TELEPHONE EXCHANGE

Piero Belforte; Mario Bondonno; Bruno Bostica, and Luciano Pilati, all of Turin, Italy, assignors to CSELT-Centro Studi E Laboratori Telecommunicazioni S.p.A., Turin, Italy

Filed Jun. 22, 1983, Ser. No. 506,710
Claims priority, application Italy, Jun. 22, 1982, 67789 A/82
Int. Cl.⁴ H04J 11/04, 3/12
U.S. Cl. 370—66 11 Claims



1. In an automatic exchange of a telecommunication system, in combination:

a switching network divided into a plurality of cascaded time division stages each containing at least one switching matrix, including a first stage with input lines adapted to carry data words pertaining to respective groups of incoming PCM channels, interstage lines adapted to carry data words pertaining exclusively to respective groups of PCM channels and a last stage with output lines adapted to carry data words pertaining exclusively to respective groups of outgoing PCM channels;

external control means for commanding the establishment and disestablishment exclusively of temporal signal paths for the transmission of data words of incoming channels from any of said input lines to any of said output lines as part of selected outgoing channels, each PCM channel having a time slot assigned thereto in a recurrent frame marked by accompanying synchronization pulses; and

internal control means responsive to commands from said external control means for selectively setting up and selectively releasing said signal paths via a matrix of each stage, said internal control means including a plurality of network controllers associated with respective matrices and arranged to communicate with one another and with said external control means by routing instructions transmitted in dedicated channels of respective groups to and from said network controllers through inputs and outputs of the associated matrices, whereby each of said network controllers solely determine the routing paths within each of said stages of said switching network.

4,543,654

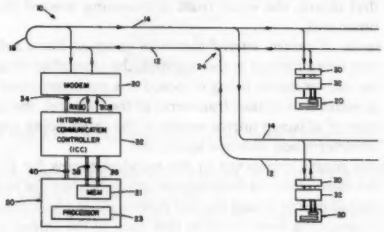
INTERFACING A COMMUNICATION NETWORK

Donald J. Jones, Dracut, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Feb. 3, 1983, Ser. No. 463,660
Int. Cl.⁴ H04J 3/00, 3/16
U.S. Cl. 370—94 11 Claims

1. A method of operating a communication network connecting a plurality of computer stations each having a memory, the function of the network being to transfer data from the memory of one station to that of another, said network having an inbound channel and an outbound channel connected at a head end, the inbound channel being for conducting transmissions toward the head end, and the outbound channel for conducting transmissions away from the head end, the stations being connected to transmit transmissions to the inbound channel and to receive transmissions from the outbound channel, data transmissions being effected over said network in the form of packets of sequential discrete signals transmitted at a uniform rate, and the time required for a signal transmitted by the ultimate station to the head on the inbound channel and thence on the outbound channel to the ultimate station being more than the time required to transmit 32 discrete signals, including the steps:

defining a current network propagation parameter p derived from the network signaling rate and the time required for a signal transmitted from the ultimate station to propagate to the network head and back to the ultimate station, said parameter p providing an indication of the number of discrete signals n that can be transmitted from the ultimate station on the inbound channel before the first of such signals can be detected on the outbound channel at the ultimate station,



Promulgating p to each station,

storing the value of p at each station,

forming, with reference to the stored value of p, each pocket for transmission so as to have greater than n discrete signals,

starting to transmit a packet only when no signals are being received by the station from the outbound channel,

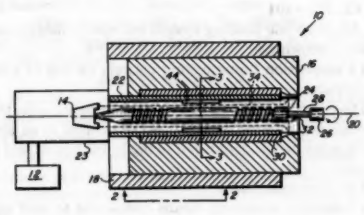
comparing, with reference to the stored value of p, the first n signals of the packet next received after starting transmission with the first n signals of the packet being transmitted to ascertain if there are discrepancies therebetween, terminating transmission when discrepancies are discerned, and absent such discrepancies, transmitting an entire packet.

4,543,655

FREE ELECTRON LASER DEVICE FOR SCANNING A SPATIAL FIELD

William J. Condell, Jr., Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1984, Ser. No. 627,304
Int. Cl.⁴ H01S 3/00
U.S. Cl. 372—2 23 Claims



1. A free electron laser device for conically scanning a spatial field, said device comprising:

a drift tube disposed concentrically about the longitudinal axis of the device,

mandrel means of less diameter than the drift tube concentrically and rotatably mounted therein so as to define an annular space between the mandrel means and the drift tube interior surface,

cooperating power supply means and magnetic field means for generating and guiding a free electron beam of annular shape as it propagates in a direction longitudinally of the tube toward its outer end and in the annular space between the tube and mandrel means,

Wiggler magnetic field means concentrically disposed about the drift tube for generating a magnetic field in a direction generally transverse of the device longitudinal axis, the Wiggler magnetic field means for exciting the electrons of the beam to lase and form a radiation wave front of annular shape in the annular space between the tube and mandrel means, the wave front propagating toward the tube outer end,

a series of canted mirror means of grooved-like configuration being formed in the mandrel, the centerline of each of the mirror means being disposed at a predetermined angle in relation to a plane transverse of the mandrel, the centerlines of adjacent mirror means of the series being spaced a predetermined distance apart, and

motor means connected to the mandrel means for rotating the same about its longitudinal axis including the series of canted mirror means formed therein during formation of a propagating wave front so that each of the canted mirror means reflects various waves of the front in order not only to redistribute the phases of the reflected waves to form asymmetric diffraction paterns in the annular space, but also to progressively steer the patterns toward the device outer end so as to form an asymmetric diffraction patterned laser beam and to project the laser beam from the device outer end into a spatial field about the device longitudinal axis and at an angle thereto, such that the major lobe of the projected beam conically scans a region of the field about the device axis.

4,543,656

ELECTRODE HOLDER SYSTEM FOR ELECTROTHERMIC SMELTING FURNACES

Knut Evensen, Oslo, Norway, assignor to Elkem a/s, Oslo, Norway

Filed Nov. 25, 1983, Ser. No. 554,896

Claims priority, application Norway, Dec. 3, 1982, 824055

Int. Cl.⁴ H05B 7/10

U.S. Cl. 373—101 **3 Claims**

1. An electrode holding system for electrothermic smelting furnace comprising:

(a) a suspension frame resting entirely on top of a smelting furnace;

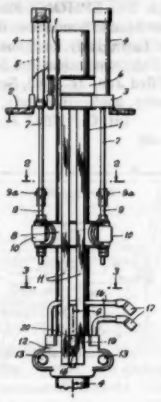
(b) two vertical rails suspended at their upper ends from said suspension frame, said rails being parallel to an electrode;

(c) stopper means connected to the lower end of said vertical rails;

(d) an electrode frame;

(e) releasable clamping means connected to said electrode and to said electrode frame;

(f) current clamping means conducting current to said electrode connected to said electrode, said stopping means representing the lowest limit for downward movement of said current clamping means; and



(g) hydraulic means connected to said electrode frame and to said suspension frame for moving said electrode up and down.

4,543,657

SYNCHRONIZING OF CLOCKS

Robert G. Wilkinson, Portsmouth, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

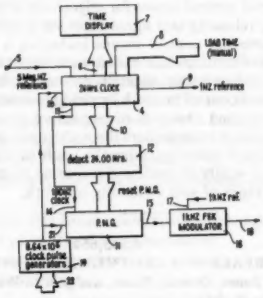
PCT No. PCT/GB81/00190, § 371 Date May 12, 1982, § 102(e) Date May 12, 1982, PCT Pub. No. WO82/01088, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 15, 1981, Ser. No. 380,736

Claims priority, application United Kingdom, Sep. 16, 1980, 8029893

Int. Cl.⁴ G04G 9/00, 7/00

U.S. Cl. 375—1 **9 Claims**



1. A transmission clock for transmitting time coded signals comprising:

a transmission pseudo-random number generator (PNG) for generating a train of pseudo-random numbers;

a pulse generator means for producing clocking pulses for input to the transmission PNG such that the generated numbers from the transmission PNG are equi-spaced in time;

a transmission reference clock which produces an output resetting signal at the end of a preselected time interval, the resetting signal being input to the transmission PNG

such that the transmission PNG is reset to a predetermined condition, referred to as zero, after the preselected time interval;

synchronizing means which can be actuated to add to the transmission PNG a number of clocking pulses equal to the number of pseudo-random numbers which are generated by the transmission PNG within the preselected time interval and to simultaneously advance the transmission reference clock by the preselected time interval to thereby synchronize the transmission PNG to the transmission reference clock; and

means to transmit the output from the transmission PNG.

4,543,658

SHEET SEPARATING DEVICE FOR A SHEET COUNTING APPARATUS

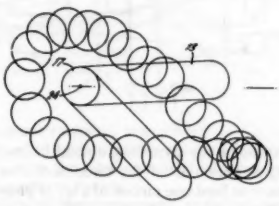
George W. Day, Dovercourt, and Kenneth G. Dalby, Clacton-on-Sea, both of United Kingdom, assignors to Vacuumatic Limited, Harwich, United Kingdom

Filed Sep. 28, 1982, Ser. No. 425,791

Claims priority, application United Kingdom, Oct. 1, 1981, 8129664

Int. Cl.⁴ G06M *9/02*

U.S. Cl. 377—8 **10 Claims**



1. A sheet separating device for a sheet counting apparatus comprising, a horizontally extending blade having a leading edge for insertion in a corner of a stack of sheets and a trailing edge, means to rotate the blade between a substantially horizontal attitude and a position in which the blade is downwardly inclined towards the trailing edge thereof, suction means on the upper side of the blade to adhere a corner of a sheet to the upper side of the blade, and a wiper pin extending parallel to the blade having guided rotary means for moving the pin as the blade pivots between said horizontal attitude and said downwardly inclined position, around the blade over the upper side therefrom from the trailing edge to the leading edge, generally vertically downwardly past the leading edge of the blade and then along the underside of the blade to transfer a corner of a sheet adhered to the upper surface of the blade by said suction means to the lower surface, wherein the improvement comprises providing coordinating means for the pin moving means and the blade means so that during a first time interval the pin moving means moves the pin over the upper side of the blade from the trailing edge to the leading edge thereof, said blade rotating means being operable during said first time interval to rotate the blade from a downwardly inclined position to a substantially horizontal attitude, said blade remaining at said substantially horizontal attitude during a second time interval during which the pin moving means moves the pin beneath the blade from the leading edge to the trailing edge thereof, said blade rotating means being operable subsequent to said second time interval to rotate the blade into said downwardly inclined position, said pin moving means being operable during the second time interval to move the pin along the underside of the blade in a substantially horizontal direction close to the underside of the blade.

4,543,659

METHOD FOR RECOGNIZING A PELLET PATTERN

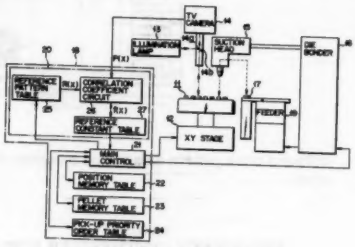
Takayuki Ozaki, Hyogo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 21, 1983, Ser. No. 534,496

Claims priority, application Japan, Sep. 22, 1982, 57-163827

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—8 **7 Claims**



1. A method for recognizing a pellet pattern, comprising the steps of:

(a) registering a good-pellet pattern, as a reference pattern, on a reference pattern table;

(b) setting a pellet pattern recognition range on the pellets in an array;

(c) effecting shape identification and position detection of each of the pellets present within the pellet pattern recognition range;

(d) effecting calculation with respect to a pellet array on the basis of the results of the shape identification and position detection of the pellets within the pellet pattern recognition range and reference data of the reference pattern table to find an array state indicating which pellets within the pellet patern recognition range are good pellets;

(e) picking up a good pellet from among the pellets present within the pellet pattern recognition range, according to data of a pick-up priority order table;

(f) registering the coordinate values of another good pellet other than the picked-up pellet on a pellet memory table during the pick-up of the good pellet;

(g) registering each of the good pellets, other than the picked-up good pellet, within the pellet pattern recognition range on a position memory table as a positional shift of it away from the position of the picked-up pellet; and

(h) sequentially picking up only the good pellets, while referring to the pick-up priority order table, pellet memory table and position memory table.

4,543,660

PATTERN FEATURES EXTRACTING APPARATUS AND METHOD

Ken-ichi Maeda, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 14, 1983, Ser. No. 485,061

Claims priority, application Japan, Apr. 15, 1982, 57-62964; Apr. 15, 1982, 57-62969

Int. Cl.⁴ G06K *9/64*

U.S. Cl. 382—34 **11 Claims**

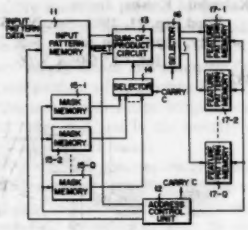
1. A pattern features extracting apparatus comprising:

a plurality of mask memories for storing a plurality of different mask pattern data whose values are obtained from Hermite's polynomials weighted by a Gaussian function;

an input pattern memory for storing unknown input pattern data;

means for accessing data in a predetermined area of said input pattern memory including a given position of the unknown input pattern; and

means for convolving the data accessed corresponding to the unknown input pattern data using the plurality of



different mask pattern data in said plurality of mask memories.

4,543,661

FREQUENCY SYNTHESIZER FOR A TRANSMITTER-RECEIVER

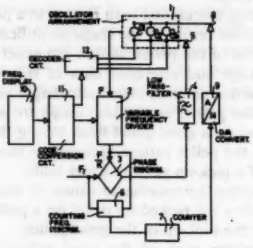
Jean P. Defeuilly, Cressely, and Jean Nguyen-Van-Nguyen, Gif-sur-Yvette, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 419,096, Sep. 16, 1982, abandoned. This application May 16, 1984, Ser. No. 611,058

Claims priority, application Netherlands, Sep. 23, 1981, 8117916

Int. Cl.[4] H04B 1/40

U.S. Cl. 455—76 **1 Claim**



1. A frequency synthesizer for controlling the operation of a transmitter-receiver, comprising:

a phase-locked loop including an oscillator arrangement having a plurality of controllable oscillators, the arrangement having an input and an output, the oscillators having respective inputs connected to the input of the arrangement,

a frequency divider having a series of first inputs, a second input and an output, the second input of the divider being connected to the output of the oscillator arrangement, the frequency divider including at least one programmable counter having inputs corresponding to the series of first inputs and having an output corresponding to the output of the divider,

a phase discriminator having an input, another input and an output, the input of the discriminator being connected to the output of the divider, the another input of the discriminator being connected to a means for generating a reference frequency,

a low pass filter connected to the output of the phase discriminator and to the input of the oscillator arrangement; the synthesizer further comprising

a frequency display device having outputs;

a code conversion circuit including at least one memory having inputs and first and second outputs, the inputs of the one memory being connected to the outputs of the frequency display device and to receive transmit-receive information, the first outputs of the one memory being connected to the inputs of the programmable counter, the memory including digital contents for selecting one of the controllable oscillators, the second outputs of the memory being arranged for conducting the digital contents;

a decoder circuit having inputs and outputs, the outputs of the decoder circuit being connected to respective oscillators of the oscillator arrangement, the inputs of the decoder circuit being connected to the second outputs of the memory, so that, responsive to the digital content of the memory, the decoder circuit selects one of the oscillators for controlling the operation of the transmitter-receiver.

4,543,662

OPTICAL BEAM SWITCHING DEVICE AND TELEPHONE EXCHANGE COMPRISING A DEVICE OF THIS KIND

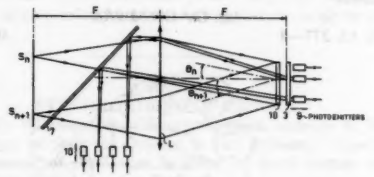
Jean Pierre Huignard, and Bertrand LeDu, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 24, 1982, Ser. No. 423,316

Claims priority, application France, Dec. 18, 1981, 81 23729

Int. Cl.[4] H04B 9/00

U.S. Cl. 455—600 **10 Claims**



1. A device for switching optical beams for optically connecting at least one of the circuits of a set of photoemitter circuits to at least one circuit of a set of photoreceptor circuits, comprising:

means for generating two inscribing light beams including two punctiform light sources and means for deflecting the optical beams transmitted by the photoemitter circuit previously made parallel by a collimator means,

the deflector means allowing direction of the optical beams to the active part of the corresponding photoreceptor circuit and comprising a diffraction grating inscribed in a photosensitive medium obtained by interference of the two inscribing light beams, having a different wavelength from that of the optical beams coming from the photoemitter circuits,

the wavelength of the optical beams transmitted by the photoemitter circuit not lying within the range of spectral sensitivity of the photosensitive medium, the photosensitive medium, in which the diffraction grating is a three-dimensional system of strata, being continuously recyclable,

the two inscribing light beams being plane wave beams which both uniformly illuminate the photosensitive medium,

a two-dimensional spacial modulator being positioned along the path of these inscribing beams between said two light sources and the photosensitive medium, the modulator allowing selection of limited areas in which diffraction gratings are inscribed, said two-dimensional spacial modulator comprising a liquid nematic helix crystal blade inserted between two sets of transparent electrodes deposited on each surface of the blade, the electrodes of each of said surfaces being mutually parallel, and directed at right angles to the direction of the electrodes of the other surface;

a lens positioned in the path of the inscribing beams, the photosensitive medium being positioned at the focus of the lens, and the punctiform light sources being able to be

displaced in a plane parallel to the surface of the photosensitive medium passing through the focus of the lens;

a semi-transparent blade situated between the two punctiform light sources and the lens, the semi-transparent blade allowing the two inscribing beams to pass therethrough and reflecting the optical beams coming from the photoemitter circuits after deflection by the diffraction grating; and

a polarizer deposited on one of said crystal blade surfaces, the one surface being the output surface for the inscribing beams.

4,543,663

PIEZOELECTRIC APPARATUS FOR POSITIONING OPTICAL FIBERS

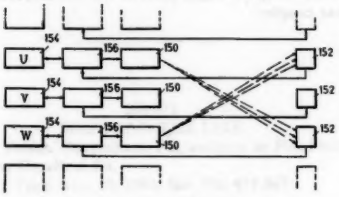
Herzl Laor, 8 Pines St., Rehovot, Israel

Continuation of Ser. No. 230,794, Feb. 2, 1981. This application Jul. 5, 1984, Ser. No. 627,897

Claims priority, application Israel, Feb. 4, 1980, 59306; Aug. 26, 1980, 60923

Int. Cl.[4] H04B 9/00

U.S. Cl. 455—600 **21 Claims**



1. A communications exchange comprising:

a first plurality of electromagnetic radiation transmitting units each of which provides a beam of information bearing electromagnetic radiation;

a second plurality of electromagnetic radiation receiving units arranged in radiation receiving relationship with said first plurality, each receiving unit being arranged to receive radiation from said first plurality of electromagnetic radiation transmitters;

means for causing the radiation from any selectable one of said transmitting units to be received by any selectable one of said receiving units for establishment of communications therebetween, said means for causing comprising at least one device for selectably orienting an end of an information bearing optical fiber.

4,543,664

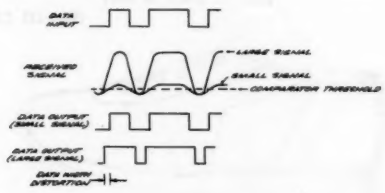
DIRECT CURRENT COUPLED DATA TRANSMISSION

Philip R. Couch, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 10, 1980, Ser. No. 110,873

Int. Cl.[4] H04B 9/00

U.S. Cl. 455—601 **10 Claims**



1. In a data transmission link for transmitting and regenerating data, a receiving means adapted to receive a data signal and capable of providing a data output responsive to said signal, said receiving means including a frequency response shaping network having means for modifying the shape of the data signal to provide for a predetermined overshoot as the signal changes energy levels to give the data output a reduced data width distortion by providing different gains for different frequency components of said data signal with the gain increasing with frequency in the upper portion of the receiving means band and falling above such band.

4,543,665

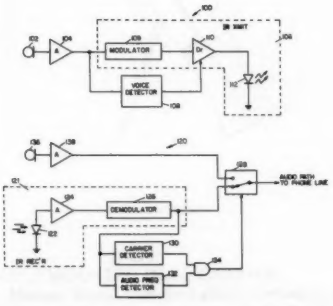
SPEAKERPHONE WITH WIRELESS INFRARED MICROPHONE

James M. Sotelo, Scotts Valley, and Peter J. Porozoff, Aptos, both of Calif., assignors to Plantronics, Inc., Santa Cruz, Calif.

Filed Jul. 13, 1982, Ser. No. 397,882

Int. Cl.[4] H04B 9/00

U.S. Cl. 455—606 **5 Claims**



4. A speakerphone, comprising:

a remote microphone unit for infrared radiation carrier transmission of an electrical voice signal representative of a user's voice;

a local microphone for receiving an acoustic voice signal and producing a representative local microphone electrical voice signal;

means for detecting an infrared radiation carrier transmission from the remote microphone unit and recovering therefrom a remote microphone electrical voice signal;

means for monitoring the signal-to-noise ratio of the recovered remote microphone electrical voice signal and producing an output signal indicative thereof; and

means responsive to the signal produced by said monitoring means, for accessing either the recovered remote microphone electrical voice signal or the local microphone electrical voice signal for presentation to a telephone line.

4,543,666

OPTICAL COUPLER NETWORK FOR COUPLING A PLURALITY OF SUBSCRIBER TRANSMITTERS TO A PLURALITY OF SUBSCRIBER RECEIVERS BY MEANS OF OPTICAL STAR COUPLERS

Hans-Hermann Witte, and Manfred Rohler, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 21, 1983, Ser. No. 534,253

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235253

Int. Cl.[4] H04B 9/00

U.S. Cl. 455—612 25 Claims

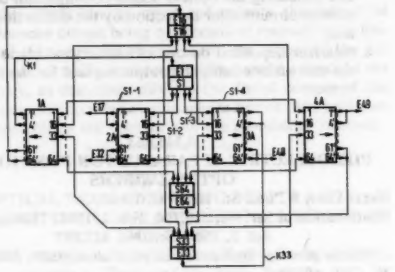
12. An optical coupler network having a plurality of nodes with node transmitters and node receivers,

a plurality of optical star couplers having star coupler input ports connected with said node transmitters and having star coupler output ports connected with said node receivers, for coupling the node transmitters with the node receivers, and

at least one node receiver being connected to a plurality of star coupler output ports for receiving a common signal from each of said plurality of star coupler output ports,

said optical star couplers forming an echo-free optical coupling network,

a plurality of sets of node receivers with each set being connected to the output ports of only one associated optical star coupler, and



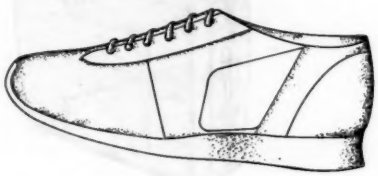
each node receiver of each set being connected to a plurality of star coupler output ports of the one associated optical star coupler.

SEPTEMBER 24, 1985

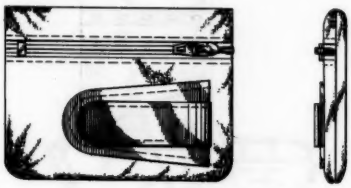
280,670
PAIR OF CUSHIONED SEALS FOR EYECUPS OF SWIMMERS' GOGGLES
Simon C. Fireman, Quincy, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Oct. 14, 1983, Ser. No. 542,021
Term of patent 14 years
U.S. Cl. D2—234

280,671
SHOE AND THE LIKE
Steven M. Foldes, Conyngham, Pa., assignor to Fun Footwear, Co., West Hazelton, Pa.
Filed Nov. 15, 1984, Ser. No. 671,867
Term of patent 14 years
U.S. Cl. D2—297

280,672
ATHLETIC SHOE WITH POCKET COVER FLAP
Robert J. Gamm, St. Louis County, Mo., assignor to Kanga-ROOS U.S.A., Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 107,093, Dec. 26, 1979, Pat. No. Des. 261,823. This application Aug. 28, 1981, Ser. No. 297,338
Term of patent 14 years
U.S. Cl. D2—309

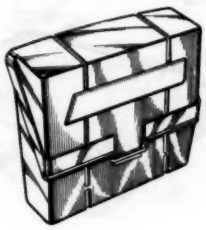


280,673
BELT POUCH
Terry Scheller, 216 Pleasant St., Newtown Centre, Mass. 02159
Filed Jun. 1, 1982, Ser. No. 383,800
Term of patent 14 years
U.S. Cl. D2—400

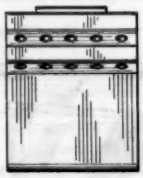


280,674
MULTIMETER HOLSTER
Michael D. Nelson, Seattle, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed Nov. 14, 1983, Ser. No. 551,671
Term of patent 14 years
U.S. Cl. D2—400

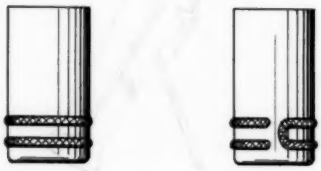
280,675
BELT MOUNTED DOLL CARRIER
John Feroce, Marion, Mass.; Maurice Lallier, Pawtucket, R.I., and George Eden, Boston, Mass., assignors to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Mar. 21, 1983, Ser. No. 477,419
Term of patent 14 years
U.S. Cl. D2—400



280,676
GOLF TEE HIP HOLDER
Godfrey E. Williams, Rte. 6, Box R-175, Muskogee, Okla. 74401
Filed Jan. 10, 1983, Ser. No. 456,624
Term of patent 14 years
U.S. Cl. D2—400

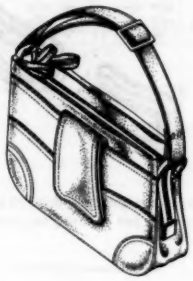


280,677
UMBRELLA HANDLE
James H. Allen, Covington, Ky., assignor to 'totes', incorporated, Loveland, Ohio
Filed Nov. 9, 1983, Ser. No. 549,824
Term of patent 14 years
U.S. Cl. D3—12



280,678
TRAVEL KIT OR THE LIKE
Dominick Loscalzo, Whitestone; Howard W. Michaelson, Coram, both of N.Y.; Robert F. Bateman, Greenville, and Martin J. Wolff, North Providence, both of R.I., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Feb. 1, 1983, Ser. No. 462,829
Term of patent 14 years
U.S. Cl. D3—39

280,679
HANDBAG
Otto K. Schimmel, Scottsdale, Ariz., assignor to Amba Marketing Systems, Inc., Phoenix, Ariz.
Filed Dec. 13, 1982, Ser. No. 449,158
Term of patent 14 years
U.S. Cl. D3—53



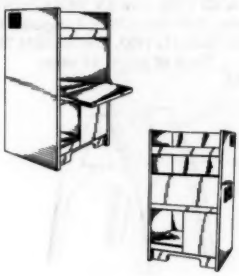
280,680
WHEELED SUITCASE
Harvey Bomes, Wellesley Hill; John Pulichino, Wellesley, both of Mass.; Lester E. Carpenter, Middletown, R.I., and John A. Wickman, Swansea, Mass., assignors to American Tourister, Inc., Warren, R.I.
Filed Aug. 25, 1983, Ser. No. 526,367
Term of patent 14 years
U.S. Cl. D3—76

280,681
TABLET-ARM CHAIR
David L. Rowland, 181 E. 73rd St., New York, N.Y. 10021
Division of Ser. No. 290,187, Aug. 5, 1981, , which is a continuation-in-part of Ser. No. 272,691, Jun. 11, 1981,. This application Jan. 5, 1984, Ser. No. 568,289
Term of patent 14 years
U.S. Cl. D6—338

280,682
UPHOLSTERED CHAIR
Gerd Lange, Kapsweyer, Fed. Rep. of Germany, assignor to Drabert Sohne Minden (Westf.), Minden, Fed. Rep. of Germany
Filed May 20, 1982, Ser. No. 380,305
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 11 MR 767
Term of patent 14 years
U.S. Cl. D6—366

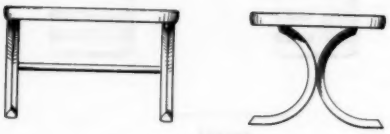
280,683
SEAT
Paul H. Parker, Box 132, R.F.D., Poultney, Vt. 05764
Filed Mar. 31, 1983, Ser. No. 480,745
The portion of the term of this patent subsequent to Sep. 10, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—370

280,684
WORD PROCESSOR CONSOLE CABINET
Paul M. Cervero, Madison Heights, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Filed Feb. 28, 1983, Ser. No. 470,130
Term of patent 14 years
U.S. Cl. D6—422



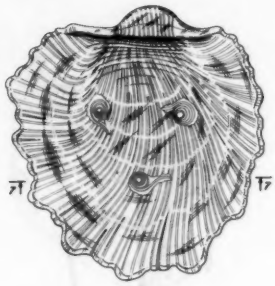
280,685
SUPPORT FOR A PAINT STRAINER
James P. Whelan, Two Mile Farm, Union St., N. Marshfield, Mass. 02059
Filed Apr. 4, 1983, Ser. No. 481,718
Term of patent 14 years
U.S. Cl. D6—462

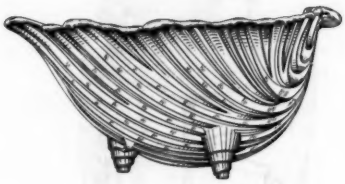
280,686
TEA TABLE
Joel A. Kramer, Bradenton, and Alton A. Harper, Tustin, both of Calif., assignors to Tropitone Furniture Company, Inc., Sarasota, Fla.
Filed Sep. 29, 1982, Ser. No. 432,112
Term of patent 14 years
U.S. Cl. D6—484



280,687
SUPPORT STAND FOR USE IN REPAIRING SADDLES
John H. Baldridge, P.O. Box 53885, Lafayette, La. 70505
Filed Mar. 11, 1983, Ser. No. 474,711
Term of patent 14 years
U.S. Cl. D6—512

280,688
SALAD BOWL
Larry R. Laslo, New York, N.Y., assignor to American Commercial Incorporated, Secaucus, N.J.
Filed Dec. 22, 1982, Ser. No. 452,382
The portion of the term of this patent subsequent to Mar. 12, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—5





280,689

BOWL

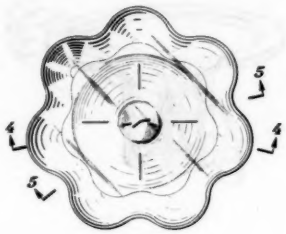
Lawrence M. Knutson, Prior Lake, Minn., assignor to Decra-Stone, Inc., Prior Lake, Minn.

Filed Jun. 17, 1982, Ser. No. 389,167

The portion of the term of this patent subsequent to Apr. 6, 1996, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—29



280,690

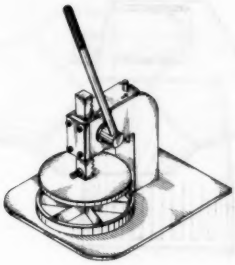
TORTILLA CHIP CUTTER

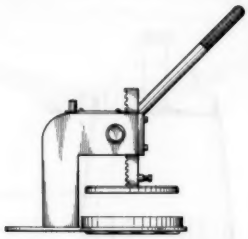
Keith D. Bloxham, Seattle, Wash., assignor to Restaurant Equipment Mfg., Inc., Seattle, Wash.

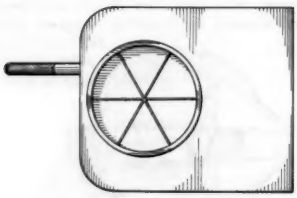
Filed May 2, 1983, Ser. No. 490,788

Term of patent 14 years

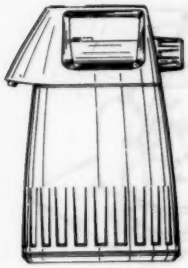
U.S. Cl. D7—43

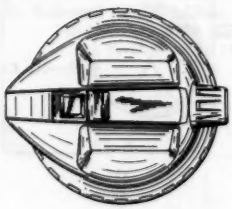




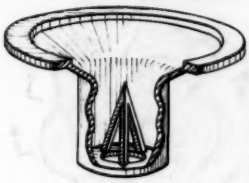


280,691
BEVERAGE DISPENSER
Carl V. Santoiemma, Gates Mills, Ohio, assignor to Norcarl Products, Inc., Mayfield Village, Ohio
Filed Jan. 31, 1983, Ser. No. 462,582
Term of patent 14 years
U.S. Cl. D7—312



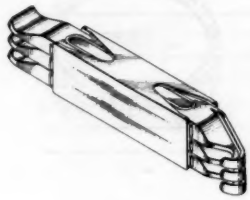


280,692
CLOSURE-PENETRATING SUPPORT FOR A BOTTLE
John F. Sullivan, 14734 Lassen St., Mission Hills, Calif. 91345
Filed Feb. 7, 1983, Ser. No. 464,150
Term of patent 14 years
U.S. Cl. D7—398



280,693
PLANT ROOT EXTRACTION TOOL
Lester H. Baker, Prescott, Ariz., assignor to Warren F. B. Lindsley, Paradise Valley, Ariz.
Filed Oct. 31, 1983, Ser. No. 547,049
Term of patent 14 years
U.S. Cl. D8—9

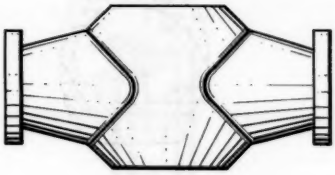
280,694
COMBINED PLASTIC TIRE LEVER SET AND HOLDER THEREFOR
Joannes H. Drexler, Doesburg, Netherlands, assignor to B.V. Machine- en Metaalwarenfabriek "Dremefa" , Doesburg, Netherlands
Division of Ser. No. 434,090, Oct. 13, 1982, Pat. No. Des. 277,640. This application Oct. 12, 1984, Ser. No. 660,367
Claims priority, application Benelux, Apr. 20, 1982, 56784 01/20; Apr. 20, 1982, 56784 02/02
Term of patent 14 years
U.S. Cl. D8—88

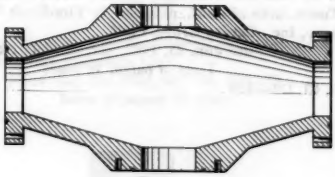


280,695
KNIFE SHARPENER
Roger J. Krueger, 7490 Kline Dr., Arvada, Colo. 80005
Filed Oct. 17, 1983, Ser. No. 542,422
Term of patent 14 years
U.S. Cl. D8—93

280,696
CEILING SUSPENSION CLIP
Richard H. Hunter, Elanora Heights, Australia, assignor to Rondo Building Services Pty. Ltd., New South Wales, Australia
Filed Jan. 7, 1983, Ser. No. 456,438
Claims priority, application Australia, Jul. 12, 1982, 0916/82
Term of patent 14 years
U.S. Cl. D8—373

280,697
PIPEHOLDER OR THE LIKE
Leon D. Ballew, P.O. Box 689, Middletown, Calif. 95461
Filed Jun. 14, 1982, Ser. No. 388,238
Term of patent 14 years
U.S. Cl. D8—382





280,698
JAR OR SIMILAR ARTICLE
Jim H. Martin, Huntington Beach, and Donnie R. Yancey, Tustin, both of Calif., assignors to Vita-Fresh Vitamin Company, Inc., Garden Grove, Calif.
Filed Jun. 23, 1983, Ser. No. 507,214
Term of patent 14 years
U.S. Cl. D9—329

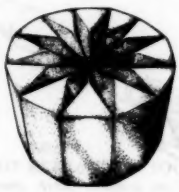
280,699
JAR OR SIMILAR ARTICLE
Jim H. Martin, Huntington Beach, and Donnie R. Yancey, Tustin, both of Calif., assignors to Vita-Fresh Vitamin Company, Inc., Garden Grove, Calif.
Filed Jun. 23, 1983, Ser. No. 507,215
Term of patent 14 years
U.S. Cl. D9—329

280,700
JAR OR SIMILAR ARTICLE
Jim H. Martin, Huntington Beach, and Donnie R. Yancey, Tustin, both of Calif., assignors to Vita-Fresh Vitamin Company, Inc., Garden Grove, Calif.
Filed Jun. 23, 1983, Ser. No. 507,216
Term of patent 14 years
U.S. Cl. D9—329

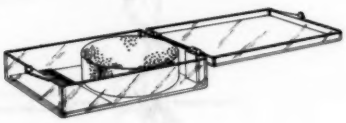
280,701
JAR OR SIMILAR ARTICLE
Jim H. Martin, Huntington Beach, and Donnie R. Yancey, Tustin, both of Calif., assignors to Vita-Fresh Vitamin Company, Inc., Garden Grove, Calif.
Filed Jun. 23, 1983, Ser. No. 507,217
Term of patent 14 years
U.S. Cl. D9—329

280,702
JAR OR SIMILAR ARTICLE
Jim H. Martin, Huntington Beach, and Donnie R. Yancey, Tustin, both of Calif., assignors to Vita-Fresh Vitamin Company, Inc., Garden Grove, Calif.
Filed Jun. 23, 1983, Ser. No. 507,218
Term of patent 14 years
U.S. Cl. D9—329

280,703
PACKAGING CONTAINER
Carl J. Strobe, 2831 Orchard Knob Rd., Atlanta, Ga. 30309
Filed Feb. 16, 1983, Ser. No. 466,967
Term of patent 14 years
U.S. Cl. D9—331

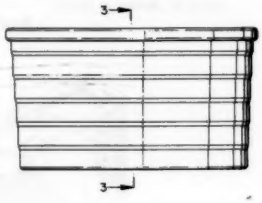


280,704
PENCIL CLEANING DISC AND ABRASIVE SHEET PACKAGE
Michael E. Dalton, Johnson County, Kans., assignor to Don C. Heiman, Lawrence, Kans.
Filed Sep. 30, 1982, Ser. No. 430,121
Term of patent 14 years
U.S. Cl. D9—337



280,705
CAN
Jozef T. Franek, Chorleywood, and Paul Porucznik, St. Albans, both of England, assignors to Metal Box p.l.c., United Kingdom
Filed Sep. 30, 1982, Ser. No. 430,298
Claims priority, application United Kingdom, Jun. 15, 1982, 1007267
Term of patent 14 years
U.S. Cl. D9—349

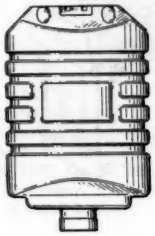
280,706
PACKAGING CONTAINER
Jozef T. Franek, Chorleywood, and Paul Porucznik, St. Albans, both of England, assignors to Metal Box p.l.c., United Kingdom
Filed Sep. 30, 1982, Ser. No. 430,301
Claims priority, application United Kingdom, Jun. 15, 1982, 1007266
Term of patent 14 years
U.S. Cl. D9—352



280,707
BOTTLE
Masamichi Imanishi, Ikoma, Japan, assignor to Suntory Kabushiki Kaisha (Suntory Limited), Osaka, Japan
Filed Jun. 29, 1983, Ser. No. 509,066
Claims priority, application Japan, Dec. 29, 1982, 57-58114
Term of patent 14 years
U.S. Cl. D9—370

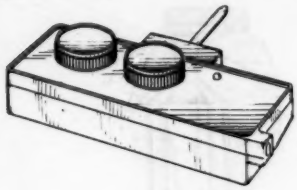
280,708
BOTTLE
Reijiro Yoshimura, New York, N.Y., assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed Apr. 18, 1983, Ser. No. 485,659
Claims priority, application Japan, Oct. 19, 1982, 57-47527
Term of patent 14 years
U.S. Cl. D9—370

280,709
BOTTLE
Don Waring, Toronto, Canada, assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Aug. 29, 1983, Ser. No. 526,133
Term of patent 14 years
U.S. Cl. D9—370

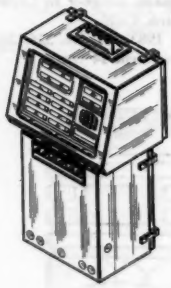


280,710
CONTAINER BODY
Arnold Skylvik, Trollhättan, Sweden, assignor to AB Cerbo, Sweden
Filed Dec. 3, 1982, Ser. No. 446,446
Term of patent 14 years
U.S. Cl. D9—434

280,711
FRYPAN CONTROL
Richard K. Thomas, Elk Grove Village, Ill., assignor to John Zink Company, Tulsa, Okla.
Filed Jul. 6, 1983, Ser. No. 511,375
Term of patent 14 years
U.S. Cl. D10—50

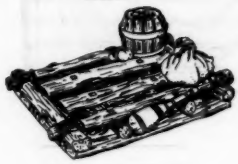


280,712
ELECTRONIC COMPUTER SCALE
Robert S. Cohn, Sunnyvale, and Charles A. Messamer, San Jose, both of Calif., assignors to Acurex Corporation, Mountain View, Calif.
Filed Feb. 7, 1983, Ser. No. 464,649
Term of patent 14 years
U.S. Cl. D10—83



280,713
PENDANT CONTAINING TEMPERATURE SENSITIVE MATTER
Paul J. Moses, and Paula B. Moses, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed May 13, 1983, Ser. No. 494,478
Term of patent 14 years
U.S. Cl. D11—79

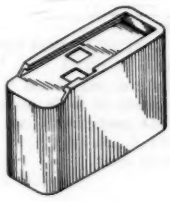
280,714
TABLE ORNAMENT
Jean W. Heap, Pwllheli, Wales, assignor to Pendelfin Studios Limited, Lancashire, England
Filed Jun. 17, 1983, Ser. No. 505,170
Claims priority, application United Kingdom, Apr. 14, 1983, 1012499
Term of patent 14 years
U.S. Cl. D11—157



280,715
TABLE ORNAMENT
Jean W. Heap, Pwllheli, Wales, assignor to Pendelfin Studios Limited, Lancashire, England
Filed Jun. 17, 1983, Ser. No. 505,562
Claims priority, application United Kingdom, Mar. 24, 1983, 831012146
Term of patent 14 years
U.S. Cl. D11—158

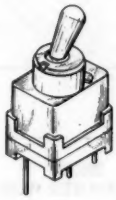
280,716
TIRE
Harold D. Fetty, Birmingham, Mich., and Daniel J. Lindner, Canal Fulton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 476,307, Mar. 17, 1983,. This application Dec. 31, 1984, Ser. No. 687,784
Term of patent 14 years
U.S. Cl. D12—147

280,717
BATTERY OR SIMILAR ARTICLE
William J. Scheid, Coral Springs, and Richard J. Toth, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 1, 1982, Ser. No. 432,240
Term of patent 14 years
U.S. Cl. D13—8

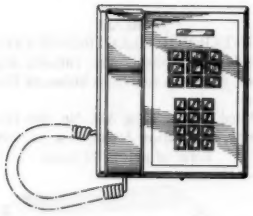


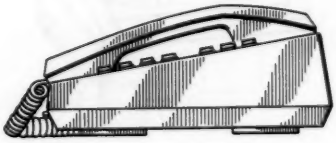
280,718
TOGGLE SWITCH
Shigeo Ohashi, Tokyo, Japan, assignor to Nihon Kaikeiki Kogyo Kabushiki Kaisha, Japan
Filed Nov. 8, 1983, Ser. No. 549,764
Claims priority, application Japan, Mar. 14, 1983, 58-010499
Term of patent 14 years
U.S. Cl. D13—37

280,719
TOGGLE SWITCH
Shigeo Ohashi, c/o Nihon Kaiheiki Kogyo Kabushiki Kaisha, 5-14 Minamimagome 1-chome, Ohta-ku, Tokyo, Japan
Filed Nov. 8, 1983, Ser. No. 549,765
Claims priority, application Japan, Mar. 14, 1983, 58-010498
Term of patent 14 years
U.S. Cl. D13—37



280,720
TELEPHONE UNIT
Norio Miura, Niiza, and Noboru Mihara, Mitaka, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Dec. 29, 1982, Ser. No. 454,452
Claims priority, application Japan, Jul. 14, 1982, 57-31813
Term of patent 14 years
U.S. Cl. D14—58

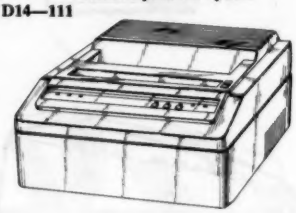




280,721
PLUG-MOUNTED BACKGROUND NOISE AMPLIFIER ENCLOSURE
William D. Quigley, 132 Oakridge Ave., Nutley, N.J. 07110, and Philip H. Nelson, 42 Harmony Rd., Spring Valley, N.Y. 10977
Filed Nov. 19, 1982, Ser. No. 443,142
Term of patent 14 years
U.S. Cl. D14—96

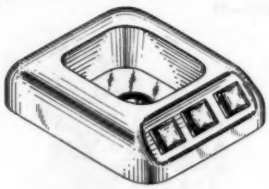
280,722
PORTABLE COMPUTER WORK STATION
Gary J. Selke, 5707 S. Cooper St., Seattle, Wash. 98118, assignor to Gary Jay Selke, Bellevue, Wash.
Filed Sep. 7, 1982, Ser. No. 415,001
Term of patent 14 years
U.S. Cl. D14—103

280,723
DATA PRINTER FOR ELECTRONIC COMPUTERS
Yoshiaki Nishida, Omorinishi, and Takashi Kajita, Kodaira, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Feb. 4, 1983, Ser. No. 464,122
Claims priority, application Japan, Sep. 16, 1982, 57-41797
Term of patent 14 years
U.S. Cl. D14—111

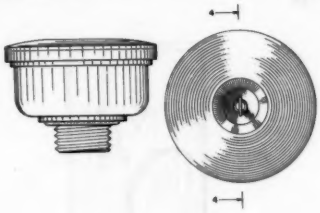


280,724
PRINTER
Masanori Hashimoto, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Nov. 17, 1982, Ser. No. 442,248
Term of patent 14 years
U.S. Cl. D14—111

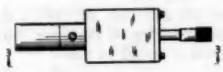
280,725
CURSOR
Daniel A. Ferrara, Jr., Bantam, Conn., assignor to Summagraphics Corporation, Fairfield, Conn.
Filed Mar. 21, 1983, Ser. No. 477,305
Term of patent 14 years
U.S. Cl. D14—114



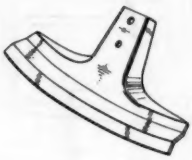
280,726
OIL FILLER CAP
Lewis L. Ruter, 919 W. Broadway, Minneapolis, Minn. 55411
Filed Sep. 20, 1982, Ser. No. 419,759
Term of patent 14 years
U.S. Cl. D15—5



280,727
PUMP FOR INJECTING AN ODOROUS MATERIAL INTO A NATURAL GAS LINE
David P. Rumbarger, Jr.; Bobby J. Campbell, and Stephen M. Harrison, all of Birmingham, Ala., assignors to Gas Odorizers, Inc., Birmingham, Ala.
Filed Jan. 3, 1983, Ser. No. 455,339
Term of patent 14 years
U.S. Cl. D15—7

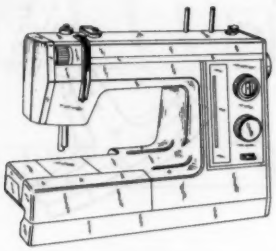


280,728
CULTIVATOR BLADE
Kelly A. Krammer, P.O. Box 144, Cupar, Saskatchewan, Canada (S0G 0Y0)
Continuation-in-part of Ser. No. 289,161, Aug. 3, 1981, Pat. No. Des. 274,187. This application Jul. 25, 1983, Ser. No. 516,960
Claims priority, application Canada, Jan. 28, 1983, 28-01-83-3
Term of patent 14 years
U.S. Cl. D15—11



280,729
CADDY FOR BEVERAGES, TOOLS OR THE LIKE FOR A LAWN MOWER HANDLE
Jaime Paternostro, 10820 Lakeside Dr., Oklahoma City, Okla. 73120
Filed Feb. 14, 1983, Ser. No. 466,153
Term of patent 14 years
U.S. Cl. D15—17

280,730
SEWING MACHINE
Koji Uchida, Hachioji, Japan, assignor to Janome Sewing Machine Co, Ltd., Tokyo, Japan
Filed Feb. 7, 1983, Ser. No. 464,733
Claims priority, application Japan, Sep. 30, 1982, 57-44150
Term of patent 14 years
U.S. Cl. D15—69

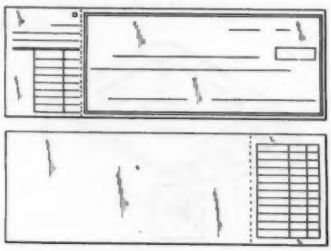


280,731
EYEGLASS FRAME
Ulrich J. Haas, Vienna, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Nov. 2, 1983, Ser. No. 547,835
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1983, 13386
Term of patent 14 years
U.S. Cl. D16—102

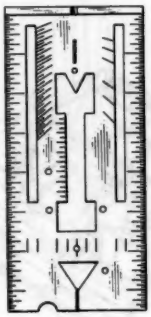
280,732
COMBINED TYPEWRITER AND COVER THEREFOR
Laurence A. Gunzi, Richmond, England, assignor to Spiralux Limited, Gillingham, Great Britain
Filed Mar. 7, 1983, Ser. No. 472,554
Term of patent 14 years
U.S. Cl. D18—1

280,733
STAMP
Toshio Fujikura, Aichi, Japan, assignor to Shachihata Industry Co., Ltd., Nagoya, Japan
Filed Mar. 15, 1983, Ser. No. 475,475
Term of patent 14 years
U.S. Cl. D18—15

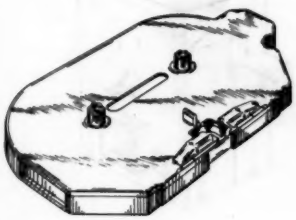
280,734
COMBINED CHECK AND CHECK STUB
John L. Bateman, Cockeysville, Md., assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 332,280, Dec. 18, 1981, Pat. No. Des. 276,821. This application Sep. 6, 1984, Ser. No. 647,788
Term of patent 14 years
U.S. Cl. D19—11



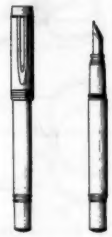
280,735
WALL PARTITION LAYOUT TOOL
Tony Miller, 3266 Bozeman St., Sacramento, Calif. 95838
Filed Feb. 7, 1983, Ser. No. 464,203
Term of patent 14 years
U.S. Cl. D19—37



280,736
RIBBON CASSETTE FOR AUTOMATIC PRINTERS
Theodorus A. Schuiling, Wijchen, Netherlands, assignor to Daisy Systems Holland B.V., Netherlands
Filed Oct. 13, 1983, Ser. No. 541,373
Claims priority, application Benelux, Apr. 13, 1980, 57780-00
Term of patent 14 years
U.S. Cl. D18—22

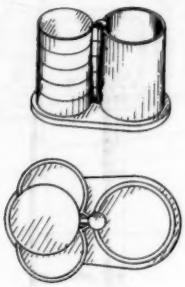


280,737
PEN
Jean-Paul G. L. Verhaegue, Saint-Herblain, France, assignor to Waterman S.A., Paris, France
Filed Apr. 13, 1983, Ser. No. 484,536
Claims priority, application France, Nov. 22, 1982, 82 824033
Term of patent 14 years
U.S. Cl. D19—48

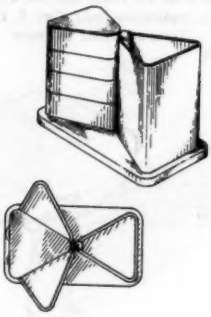


280,738
ADHESIVE TAPE APPLICATOR
Ermanno Grassi, Varese, Italy, assignor to Comet S.A.R.A. Societa Autoadesivi Resin E Affine S.P.A., Concagno, Italy
Filed Mar. 25, 1983, Ser. No. 479,086
Claims priority, application Italy, Oct. 5, 1982, 23099/82[U]
Term of patent 14 years
U.S. Cl. D19—68

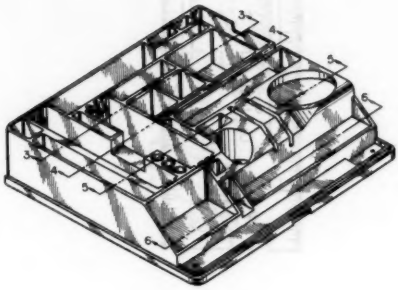
280,739
DESK RECEPTACLE FOR WRITING INSTRUMENTS AND OFFICE SUPPLIES OR THE LIKE
Henry C. Wang, No. 197-2 Chung-Shiau E. Rd., Sec. 3, Taipei, Taiwan
Filed Sep. 14, 1982, Ser. No. 418,051
Term of patent 14 years
U.S. Cl. D19—77



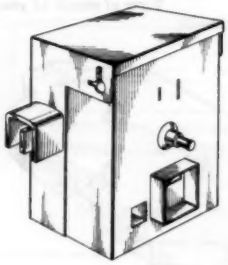
280,740
DESK RECEPTACLE FOR WRITING INSTRUMENTS AND OFFICE SUPPLIES OR THE LIKE
Henry C. Wang, No. 197-2, Chung-Shiau E. Rd., Sec. 3, Taipei, Taiwan
Filed Sep. 14, 1982, Ser. No. 418,054
Term of patent 14 years
U.S. Cl. D19—77



280,741
COMPARTMENTED TRAY FOR DRAFTING SUPPLIES
Richard W. Chatham, P.O. Box 6361, Greensboro, N.C. 27406
Continuation-in-part of Ser. No. 277,938, Jun. 26, 1981,. This application Mar. 10, 1983, Ser. No. 474,142
Term of patent 14 years
U.S. Cl. D19—77

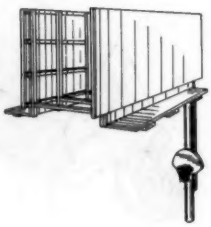


280,742
VENDING MACHINE COIN BOX
Nathan D. Johnson, 9808 Knox, Overland Park, Kans. 66212
Filed Jun. 15, 1983, Ser. No. 504,574
Term of patent 14 years
U.S. Cl. D20—9



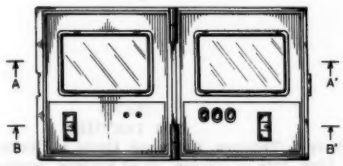
280,743
HAND FORM FOR HOLDING A GOLF GLOVE OR THE LIKE
Gerald M. Pregon, 9125 Desmond Dr., St. Louis, Mo. 63126
Filed Mar. 21, 1983, Ser. No. 477,072
Term of patent 14 years
U.S. Cl. D20—33

280,744
ADVERTISING DISPLAY STRUCTURE AND SPORTS FACILITY
Marcia Gaylor, Suite 5706, 300 N. State St., Chicago, Ill. 60610
Filed Oct. 24, 1983, Ser. No. 544,556
Term of patent 14 years
U.S. Cl. D20—39



280,745
EMERGENCY MESSAGE DISPLAY SIGN
Ronald W. Cobb, Covington, Ga., assignor to Apco Graphics, Inc., Atlanta, Ga.
Filed Jan. 3, 1983, Ser. No. 454,971
Term of patent 14 years
U.S. Cl. D20—42

280,746
ELECTRONIC GAME HOUSING
Gunpei Yokoi, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan
Filed Apr. 25, 1983, Ser. No. 488,070
Claims priority, application Japan, Nov. 27, 1982, 57-53375
Term of patent 14 years
U.S. Cl. D21—13



280,747
GAME CABINET
Arthur J. Stasney, Laguna Beach, Calif., assignor to Electro-Sport, Inc., Costa Mesa, Calif.
Filed Feb. 14, 1983, Ser. No. 465,963
Term of patent 14 years
U.S. Cl. D21—13

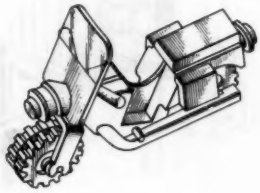
280,748
ARCADE GAME CABINET
Eric Jansons, Schaumburg; Stanley W. Jarocki, Rolling Meadows, and Walter A. Godlewski, Maywood, all of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.
Filed Jun. 6, 1983, Ser. No. 501,448
Term of patent 14 years
U.S. Cl. D21—13

280,749
TOY TEETHER
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed May 2, 1983, Ser. No. 490,868
Claims priority, application United Kingdom, Nov. 12, 1982, 1009669
Term of patent 14 years
U.S. Cl. D21—65

280,750
TOY MOTORCYCLE
Shimomura Toshimasa, Osaka, Japan, assignor to Tonan Merchandise Inc., Osaka, Japan
Filed Jul. 18, 1983, Ser. No. 515,388
Claims priority, application United Kingdom, Apr. 12, 1983, 1012448
Term of patent 14 years
U.S. Cl. D21—134

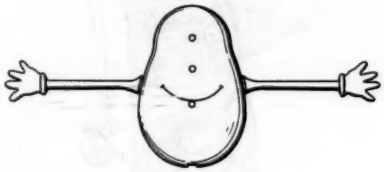
280,751
TOY MOTORCYCLE
Shimomura Toshimasa, Osaka, Japan, assignor to Tonan Merchandise Inc., Osaka, Japan
Filed Jul. 18, 1983, Ser. No. 515,389
Claims priority, application United Kingdom, Apr. 12, 1983, 1012449
Term of patent 14 years
U.S. Cl. D21—134

280,752
TOY MOTORCYCLE
Erling T. Dideriksen, Billund, Denmark, assignor to Interlego A.G., Switzerland
Filed Dec. 10, 1982, Ser. No. 448,779
Claims priority, application Denmark, Nov. 17, 1982, 1087/82
Term of patent 14 years
U.S. Cl. D21—135

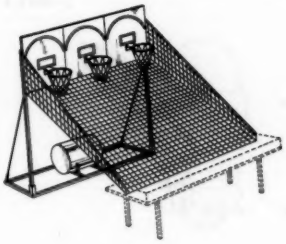


280,753
TOY JACK-IN-THE-BOX
Jeffrey Foraker, 128 N. Belleaire St., Bourbonais, Ill. 60914, and Lawrence Walz, 2229 W. 170th St., Hazelcrest, Ill. 60429
Filed Mar. 10, 1983, Ser. No. 473,993
Term of patent 14 years
U.S. Cl. D21—151

280,754
CONSTRUCTION TOY FIGURE
Bonnie Zacherle, Norwood, Mass.; Ken Nichols, Providence, R.I., and Elizabeth Knight, Milton, Mass., assignors to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Feb. 7, 1983, Ser. No. 464,767
Term of patent 14 years
U.S. Cl. D21—166

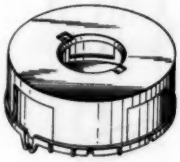


280,755
COMBINED BASKETBALL GAME GOALS AND RETURN NET
Ken C. Cochran, P.O. Box 1073, Salina, Kans. 67401
Filed Jan. 17, 1983, Ser. No. 458,571
Term of patent 14 years
U.S. Cl. D21—201

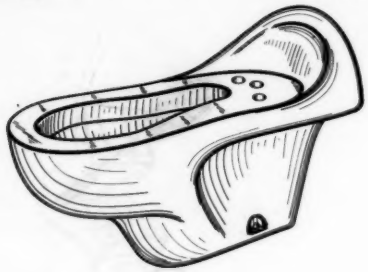


280,756
REMOVABLE GRIP SLEEVE FOR TENNIS RACKET OR THE LIKE
Albert H. Kaner, 1893 Long Pointe Dr., Bloomfield Hills, Mich. 48013
Filed Dec. 30, 1982, Ser. No. 454,905
Term of patent 14 years
U.S. Cl. D21—222

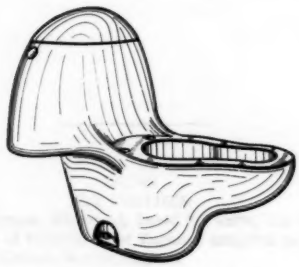
280,757
DISPENSER FOR SOLID MATERIAL
John M. Paulovich, Hewitt, and Manharbhai K. Patel, Saddle Brook, both of N.J., assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Sep. 23, 1982, Ser. No. 422,334
Term of patent 14 years
U.S. Cl. D23—3



280,758
BIDET
Joseph W. Platner, Footes Bridge Rd., Guilford, Conn. 06437
Filed Mar. 18, 1983, Ser. No. 476,697
Term of patent 14 years
U.S. Cl. D23—51

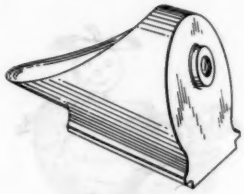


280,759
TOILET
Joseph W. Platner, Footes Bridge Rd., Guilford, Conn. 06437
Filed Mar. 18, 1983, Ser. No. 476,648
Term of patent 14 years
U.S. Cl. D23—65

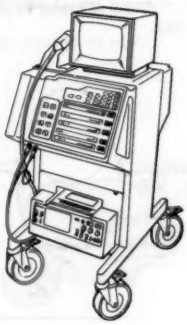


280,760
HEATER
Hugo A. Kogan, 1659 Cobo Ave., Buenos Aires, Argentina
Filed Sep. 20, 1982, Ser. No. 420,206
Claims priority, application Argentina, Mar. 29, 1982, 42.505
Term of patent 14 years
U.S. Cl. D23—111

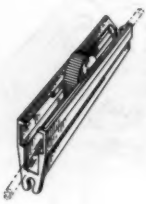
280,761
CRUCIBLE FOR CASTING MOLTEN DENTAL AND JEWELRY ALLOYS
Robert M. Silsby, Simsbury, Conn., assignor to The J. M. Ney Company, Bloomfield, Conn.
Filed Sep. 2, 1982, Ser. No. 414,408
Term of patent 14 years
U.S. Cl. D24—10



280,762
MEDICAL ULTRASOUND SCANNER
LeRoy J. LaCelle, and Joseph L. Ungar, both of Redmond, Wash., assignors to Advanced Technology Laboratories, Inc., Bellevue, Wash.
Filed Aug. 19, 1982, Ser. No. 409,820
Term of patent 14 years
U.S. Cl. D24—17

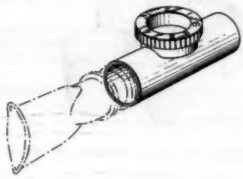


280,763
MEDICAL TUBING ROLLER CLAMP
Lee K. Kulle, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Nov. 17, 1982, Ser. No. 442,334
Term of patent 14 years
U.S. Cl. D24—27

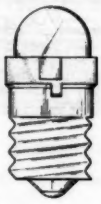


280,764
INJECTION SITE
Edward J. Bourini, Cary, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Jul. 19, 1982, Ser. No. 399,396
Term of patent 14 years
U.S. Cl. D24—53

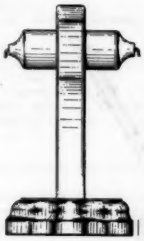
280,765
DESIGN FOR INSPIRATORY MUSCLE TRAINER
Frank J. Alvino, N. Caldwell, N.J., assignor to HealthScan Inc., Upper Montclair, N.J.
Filed Nov. 4, 1982, Ser. No. 439,302
Term of patent 14 years
U.S. Cl. D24—62



280,766
LIGHT EMITTING DIODE LAMP (LED LAMP)
Teizo Fujita, Ibaraki, and Haruo Kimura, Takatsuki, both of Japan, assignors to IDEC IZUMi Corporation, Osaka, Japan
Filed Apr. 19, 1983, Ser. No. 486,579
Claims priority, application Japan, Nov. 2, 1982, 57-49914; Nov. 2, 1982, 57-49915; Nov. 2, 1982, 57-49916; Nov. 2, 1982, 57-49917
Term of patent 14 years
U.S. Cl. D26—2



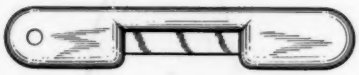
280,767
COMBINATION CANDLE AND PEDESTAL HOLDER
Edward S. Zidek, 9265 Lacy Ave., Morrisville, Pa. 19067
Filed Sep. 15, 1983, Ser. No. 532,546
Term of patent 14 years
U.S. Cl. D26—10



280,768
VACUUM CLEANER
John T. Ferraris, Stamford; James E. Billick, Norwalk, and George L. Schick, Easton, all of Conn., assignors to Electrolux Corporation, Stamford, Conn.
Filed Sep. 30, 1983, Ser. No. 537,979
Term of patent 14 years
U.S. Cl. D32—23

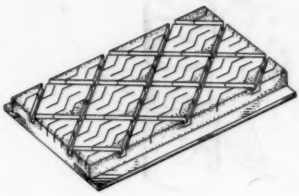
280,769
SPONGE MOP
Robert S. Johnson, Seattle; Paul E. Fletcher, Seattle; William S. Benjamin, Seattle, and John I. Zaitvay, Mercer Island, all of Wash., assignors to The Lighthouse for the Blind, Incorporated, Seattle, Wash.
Filed Jul. 25, 1983, Ser. No. 516,530
Term of patent 14 years
U.S. Cl. D32—44

280,770
STRAIGHT BLADE SCRAPER
Randy Selnick, 54 Amherst Dr., Massapequa, N.Y. 11758
Filed Aug. 8, 1983, Ser. No. 521,277
Term of patent 14 years
U.S. Cl. D32—46

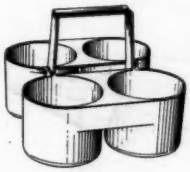


280,771
MOBILE DISPENSER RACK
Earl D. Barnett, Glenview, Ill., assignor to Chicago Show Printing Co., Morton Grove, Ill.
Filed Dec. 6, 1982, Ser. No. 447,409
Term of patent 14 years
U.S. Cl. D34—22

280,772
REPLACEABLE PULLEY LAGGING PAD
Hugh L. McCreery, Galt; David A. Van Teslaar, and Larry L. Walker, both of Stockton, all of Calif., assignors to Holz Rubber Company, Inc., Lodi, Calif.
Filed Sep. 13, 1982, Ser. No. 417,800
Term of patent 14 years
U.S. Cl. D34—35



280,773
BOTTLE CARRIER
James T. Addy, Jr., New York, and Alfred V. Mohr, Island Park, both of N.Y., assignors to Dr. Pepper Company, Dallas, Tex.
Filed Apr. 18, 1983, Ser. No. 486,973
Term of patent 14 years
U.S. Cl. D34—44



280,774
SIMULATIVE TOY BANK
Rosemarie A. Rossi, 9715 Downey and Sanford Bridge Rd., Downey, Calif. 90240
Filed Jan. 6, 1983, Ser. No. 456,335
Term of patent 14 years
U.S. Cl. D99—41

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF SEPTEMBER, 1985

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AB ASEA Atom: *See*—
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Ab Volvo Penta: *See*—
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Abe, Norio; and Kawahara, Yoshiaki, to Bridgestone Corporation. Strip supplying apparatus. 4,543,149, Cl. 156-350.000.

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Ackerman, Gordon K. Toy display wall hanging. 4,543,278, Cl. 428-18.000.

Ackley, Mark W.; and Szafranski, Brian D., to Figgie International Inc. Sorbent type filter assembly for a respirator and method of making same. 4,543,112, Cl. 55-316.000.

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Adler, David T. Safety shield for a milling machine, drill press, and the like. 4,543,021, Cl. 409-134.000.

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Andersson, Mikael; Horlen, Per; and Kraemer, Wieland, to AB ASEA Atom. Method of and plant for combustion of water-vapor generating fuels. 4,542,621, Cl. 60-39.050.

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Barber, William D.; Eberhard, Jeffrey W.; and Karr, Steven G., to General Electric Company. Time domain technique to determine mean frequency. 4,542,657, Cl. 73-861.250.

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Hartig, Juergen; Stoessel, Armin; Herrmann, Guenter; and Marosi, Laszlo, 4,543,427, Cl. 568-342.000.
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Omo, RB, Jr., 4,542,674, Cl. 83-527.000.

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Rodgers, Stephen D.; Dick, Richard J.; and McGinnis, Vincent D., 4,543,418, Cl. 549-562.000.

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Bauer, Eric; and Moulin, Blaise, to Caracteres S.A. Removable printing disc coupling for printing machine. 4,542,999, Cl. 400-175.000.

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Defago, Raymond; and Bauerle, Rolf, 4,543,102, Cl. 8-471.000.

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Thoma, Wilhelm; Nachtkamp, Klaus; Schroer, Walter; and Langel, Rolf, 4,543,144, Cl. 156-230.000.
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Bean, Robert; Gardner, Edward A.; Chow, Michael; Rubinson, Barry L.; Lary, Richard F.; and Blackledge, Robert, to Digital Equipment Corporation. Apparatus and method for controlling digital data processing system employing multiple processors. 4,543,626, Cl. 364-200.000.

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Beattie, David L. G.; Bear, Herbert; and Willis, Robin B., 4,543,114, Cl. 55-418.000.

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Beck, Jeffrey L., to Conoco Inc. Slurry concentration and dilution apparatus. 4,542,775, Cl. 141-65.000.

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Beer, Henri B.; Katz, Michael; and Hinden, Jean M., to ELTECH Systems Corporation. Method of making a catalytic lead-based oxygen evolving anode. 4,543,174, Cl. 204-290.00R.

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Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Use of norbornyl oxyacetaldehyde in augmenting or enhancing aroma of detergents or fabric softeners. 4,543,192, Cl. 252-8.600.

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Bell, James L.; and Horvath, John, 4,543,028, Cl. 414-408.000.

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Clause, Marvin B., Jr.; and Thompson, Callie R., 4,542,893, Cl. 270-52.500.

Bell, James L.; and Horvath, John, to Bell Equipment Company. Dump apparatus for trash containers. 4,543,028, Cl. 414-408.000.

Bellis, Harold E., to Du Pont de Nemours, E. I., and Company. Process for preparing substituted formamides. 4,543,424, Cl. 564-215.000.

Beltone Electronics Corporation: *See*—
Brander, Richard, 4,543,453, Cl. 179-107.00R.

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McGuire, Samuel B., 4,542,637, Cl. 72-466.000.

Bennett, John A.; and Taylor, Scott L., to Versatech Products Inc. Apparatus for cleaning beaches. 4,542,550, Cl. 15-3.000.

Benson, Benjamin A. Carrying case. 4,542,777, Cl. 150-52.00B.

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Oprysko, Modest M.; and Beranek, Mark W., 4,543,270, Cl. 427-53.100.

Berczik, Douglas M.; Brodi, George; and O'Connell, Thomas E., to United Technologies Corporation. Processing for titanium alloys. 4,543,132, Cl. 148-11.50F.

Berdanier, Barry N., to Texas Instruments Incorporated. Scanner position sensor for an integrated laser/FLIR rangefiner. 4,542,986, Cl. 356-5.000.

Berg, Lloyd; and Yeh, An-I. Separation of methyl acetate from methanol by extractive distillation. 4,543,164, Cl. 203-56.000.

Berger, Frank M.; DeGraw, Joseph I., Jr.; and Johnson, Howard L., to Berger, Frank M. P-Alkyl or cycloalkyl phenoxy alkanols and alkanol esters and process for the treatment of allergic conditions. 4,543,362, Cl. 514-480.000.

Berglund, Norman, to Thunder Bay Northland Machinery Inc. Rotary grain cleaner. 4,543,179, Cl. 209-30.000.

Bergmans, Jean-Paul: *See*—
Van Campenhout, Jan; de Stecker, Hans; Notredame, Paul; Muyle, Eddy; Bergmans, Jean-Paul; and Bergmans, Patrick, 4,543,615, Cl. 358-285.000.

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Berisch, Volker; and Birkenbach, Alfred, to ITT Industries, Inc. Deceleration-sensitive braking pressure control unit for a vehicular hydraulic brake system. 4,542,945, Cl. 303-6.00C.

Berner, Erling. Rotary-type heat exchanger. 4,542,782, Cl. 165-9.000.

Bernstein, Larry H. Malate dehydrogenase method. 4,543,327, Cl. 435-26.000.

Berstein, Garri; and Bagusche, Siegfried, to Wilhelm Hegenscheidt Gesellschaft mbH. Rolling tool. 4,542,565, Cl. 29-90.00R.

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Johnson, Rodney C., 4,542,656, Cl. 73-861.280.

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Rice, Michael A.; and Herman, Stewart T., 4,543,189, Cl. 210-713.000.

Betts, Robert E.; Crawford, John F.; and Meador, Jacqueline C., to United States of America, Army. Contoured configured detonating cord and detonator. 4,542,695, Cl. 102-378.000.

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Biddulph, Richard H., to United States Borax & Chemical Corporation. Method of treating refractory boride shapes. 4,543,227, Cl. 264-233.000.

Bieber, Gerold, to Zahnradfabrik Friedrichafen. Mechanical gear selector. 4,542,662, Cl. 74-470.000.

Biermann, Wendell J., to United States of America, Energy. Variable effect desorber-resorber absorption cycle. 4,542,629, Cl. 62-476.000.

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Sarkisian, Paul H.; Reimann, Robert C.; and Biermann, Wendell J., 4,542,628, Cl. 62-335.000.

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Schnell, Peter; Bihlmayer, Gustav; and Daume, Dietrich, 4,543,145, Cl. 156-231.000.

Bilbrey, Robert A.; and Koball, Bruce R., to Universal Supply, Inc.; and Towers, Edward F. Opto-mechanical cursor positioning device. 4,543,571, Cl. 340-710.000.

Billing, Ralph S.: *See*—
Bittner, John R.; Billing, Ralph S.; and Stewart, Robert T., Jr., 4,543,002, Cl. 400-212.000.

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Czermak, Ladislaus; Steinhart, Winfried; Binder, Karl-Franz; and Steinhart, Paul, 4,543,033, Cl. 414-732.000.

Binder, Michael; Walker, Charles W., Jr.; Petersen, Eric R.; Wade, William L., Jr.; and Gilman, Sol, to United States of America, Army. Method of pretreating carbon black powder to improve cathode performance and lithium sulfuryl chloride cell including the pretreated carbon black powder. 4,543,305, Cl. 429-101.000.

Bingler, Douglas J., to Milton Roy Company. Injection molded sliding vane pump. 4,543,228, Cl. 264-275.000.

Bio-Plas, Inc.: *See*—
DeVaughn, Donald H., 4,542,833, Cl. 215-319.000.

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Gennari, Federico, 4,543,408, Cl. 536-26.000.

Biosonics, Inc.: *See*—
Brenman, Henry S.; Katz, Philip; and Schwartz, Harold L., 4,542,753, Cl. 128-788.000.

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Berisch, Volker; and Birkenbach, Alfred, 4,542,945, Cl. 303-6.00C.

Bischoff, Rainer. Camper superstructure. 4,542,933, Cl. 296-164.000.

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Beer, Henri B.; Hinden, Jean M.; Honard, Mark R.; Bishara, Jeries I.; and Walker, Joseph K., Jr., 4,543,348, Cl. 502-101.000.

Bishop, Crawford A. Post driver for tractor with power lift. 4,542,880, Cl. 254-29.00R.

Bisping, Bernhard; Wallow, Peter; Gersbach, Klaus; and Romer, Rudolf, to Rheinmetall GmbH. Munitions round for barrel-type weapons. 4,542,696, Cl. 102-430.000.

Bittner, John R.; Billing, Ralph S.; and Stewart, Robert T., Jr., to Genicom Corporation. Multicolor printing. 4,543,002, Cl. 400-212.000.

Bjor, Hakon E., to Ingenior Thor Furuholmen A/S. Method and a means for aligning a rock drill. 4,542,794, Cl. 173-1.000.

Black, Charles E.: *See*—
Cobb, Albert R., III; and Black, Charles E., 4,543,454, Cl. 200-16.00A.

Blackledge, Robert: *See*—
Bean, Robert; Gardner, Edward A.; Chow, Michael; Rubinson, Barry L.; Lary, Richard F.; and Blackledge, Robert, 4,543,626, Cl. 364-200.000.

Blais, Gordon A. Flame injector for internal combustion engines. 4,542,724, Cl. 123-266.000.

Blatt, L. Douglas: *See*—
Blatt, Leland F.; and Blatt, L. Douglas, 4,543,034, Cl. 414-752.000.

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Kasser, Jurgen, 4,543,532, Cl. 329-110.000.

Blevins, Jack F.; and Piersol, Jay L., to Armstrong World Industries, Inc. Cooling tower fill compositions. 4,543,384, Cl. 524-501.000.

Blight, Ronald E.; and Schloemann, Ernst F. R. A., to Raytheon Company. Magnetically tuned resonant circuit. 4,543,543, Cl. 333-24.100.

Blum, Rainer; Buensch, Hellmut; Druschke, Wolfgang; and Mueller, Helmut, to BASF Aktiengesellschaft. Mixtures, for polyurethane adhesives, which consist of polyols and/or polyamines and polyisocyanates, are liquid at room temperature, have a long shelf life and can be activated by heat. 4,543,393, Cl. 525-124.000.

Blumle, Martin, to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG. Separator plates for rotating feed segments of a sheet feeder. 4,542,895, Cl. 271-101.000.

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Marti, Wilhelm; and Reichen, Fredy, 4,542,921, Cl. 285-114.000.

BOC Group, Inc., The: *See*—
Stawicki, Robert J., 4,543,155, Cl. 162-57.000.

BOC Group plc, The: *See*—
Bowes, Robert G., 4,543,060, Cl. 432-23.000.

Boden, Richard M.: *See*—
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,543,192, Cl. 252-8.600.
Licciardello, Michael; and Boden, Richard M., 4,543,203, Cl. 252-522.00R.

Bodenstein, Johannes J.; and Farrell, Leslie J., to Johannesburg Consolidated Investment Company Limited. Magnesium production. 4,543,122, Cl. 75-0.50B.

Boehringer Mannheim GmbH: *See*—
Albert, Winfried; Ziegenhorn, Joachim; Siedel, Joachim; Batz, Hans-Georg; Lenz, Helmut; and Pautz, Brigitte, 4,543,325, Cl. 435-7.000.
Keller, Franz; and Hennemann, Hans, 4,543,328, Cl. 435-30.000.

Boeing Company, The: *See*—
Caldwell, Allan L.; Hardy, Richard; and Neumann, Frank D., 4,542,866, Cl. 244-45.00A.
McArdle, Francis H.; and Schneider, Earl, 4,542,567, Cl. 29-156.80R.
McArdle, Francis H.; and Schneider, Earl, 4,543,040, Cl. 416-134.00A.
McDermott, Arthur W., 4,543,555, Cl. 336-206.000.

Bogwitz, Wolfram E. R.; Flecknoe-Brown, Anthony E.; and Duchovni, Naum, to Hitek Limited. Thermoforming machine. 4,543,054, Cl. 425-335.000.

Bohan, Phillip. Container disposal apparatus. 4,542,688, Cl. 100-173.000.

Bolger, Thomas V., to RCA Corporation. Digital signal phase measuring apparatus as for a phase-locked loop. 4,543,600, Cl. 358-13.000.

Bollinger, Arthur E.: *See*—
Head, Kenneth O.; and Bollinger, Arthur E., 4,543,649, Cl. 367-96.000.

Bollinger, David E.; and McCormick, Samuel L., to Eli Lilly & Company. Capsule-sealing method and apparatus. 4,543,138, Cl. 156-69.000.

Bollinger, Frederic G., to Monsanto Co. Substituted 2-imino-1,3-dithio and 1,3-oxathio heterocyclic compounds as herbicidal antidotes. 4,542,609, Cl. 47-57.600.

Bondoc, Alfredo A.; Flood, Eugene J.; and Sieling, Frederick W., to GAF Corporation. Sheet type felt. 4,543,158, Cl. 162-145.000.

Bondonno, Mario: *See*—
Belforte, Piero; Bondonno, Mario; Bostica, Bruno; and Pilati, Luciano, 4,543,653, Cl. 370-66.000.

Bonner, Stanley V., to Foster Wheeler Energy Corporation. Self-positioning scarfing apparatus. 4,543,022, Cl. 409-298.000.

Bootman, Matthew W.; and Yamamoto, Ronald K., to American Hospital Supply Corporation. Self-sealing subcutaneous injection site. 4,543,088, Cl. 604-93.000.

Borg-Warner Corporation: *See*—
Roberts, Richard W., 4,543,043, Cl. 417-222.000.
Shaffer, Jacob E., Jr.; Reier, John C.; and Tome, Frederick C., Jr., 4,543,468, Cl. 219-279.000.

Borgner, Klaus: *See*—
Grun, Gustav; and Borgner, Klaus, 4,543,029, Cl. 414-412.000.

Boryta, Daniel A.; and Nabighian, Misac N., to Foote Mineral Company. Method for determining a leak in a pond liner of electrically insulating sheet material. 4,543,525, Cl. 324-54.000.

Borzym, John J. Cutoff die set seat accelerator using rotary to linear motion converter. 4,542,670, Cl. 83-295.000.

Boschung, Andre: *See*—
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre, 4,543,429, Cl. 568-446.000.

Bose, Debasis; and Freilich, Alfred, to Allied Corporation. Nickel high-chromium base brazing filler metal for high temperature applications. 4,543,135, Cl. 148-403.000.

Bostica, Bruno: *See*—
Belforte, Piero; Bondonno, Mario; Bostica, Bruno; and Pilati, Luciano, 4,543,653, Cl. 370-66.000.

Bounds, Jerry O., to Crude Oil Quality Control Corporation of Michigan. Centrifuge and valve therefor. 4,543,083, Cl. 494-4.000.

Bowen, H. Kent: *See*—
Barringer, Eric A.; Fegley, M. Bruce, Jr.; and Bowen, H. Kent, 4,543,341, Cl. 501-1.000.

Bowes, Robert G., to BOC Group plc, The. Heat treatment of workpieces. 4,543,060, Cl. 432-23.000.

Boyd, James A., to Lockheed Corporation. Trailing edge device for an airfoil. 4,542,868, Cl. 244-198.000.

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Falgoux, Daniel; Simoulin, Danielle; and Pascal-Mousselard, Michel, 4,543,430, Cl. 568-678.000.

Bracher, Max: *See*—
Konrad, Eugen; Braun, Hans J.; Mager, Herbert; Noser, Friedrich; and Bracher, Max, 4,543,425, Cl. 564-442.000.

Bradley, John J.; and Hansen, Debra K., to Paper Converting Machine Company. Method of making elastic diapers, apparatus therefor, and product. 4,543,141, Cl. 156-164.000.

Braillon & Cie: *See*—
Braillon, Philibert M., 4,542,890, Cl. 269-8.000.

Braillon, Philibert M., to Braillon & Cie. Magnetic chuck. 4,542,890, Cl. 269-8.000.

Brand-Rex Company: *See*—
Snow, Howard R., 4,542,946, Cl. 339-40.000.

Brandenburg, Klaus; and Weber, Wendelin, to U.S. Philips Corporation. Printer having automatic paper positioning means. 4,543,004, Cl. 400-649.000.

Brander, Richard, to Beltone Electronics Corporation. Electronic hearing aid control circuit. 4,543,453, Cl. 179-107.00R.

Brandi, Roberto; Di Lena, Francesco; Vanore, Silvestro; Naess, Tor; and Schamaun, Paul U., to Norsk Agip A/S. Off-shore mooring structure. 4,543,014, Cl. 405-207.000.

Brandner, Alexander: *See*—
Diamantoglou, Michael; Brandner, Alexander; and Meyer, Gerhard, 4,543,409, Cl. 536-68.000.

Brandt, Lennart; and Pichl, Heinz, to Ab Volvo Penta. Inboard outboard drive and mounting therefor. 4,543,068, Cl. 440-53.000.

Brandt, Randy. Integrated connector and modem. 4,543,450, Cl. 179-2.00C.

Braun, Hans J.: *See*—
Konrad, Eugen; Braun, Hans J.; Mager, Herbert; Noser, Friedrich; and Bracher, Max, 4,543,425, Cl. 564-442.000.

Brenholdt, Irving R., to St. Regis Paper Company. Transducer mounting assembly. 4,543,482, Cl. 250-343.000.

Brenman, Henry S.; Katz, Philip; and Schwartz, Harold L., to Biosonics, Inc. Apparatus and method for stimulating penile erectile tissue. 4,542,753, Cl. 128-788.000.

Bressert, Edgar; Gulich, Gerhard; Martini, Helmut; Meny, Rudi; Sauer, Roland; and Wohr, Rolf, to Robert Bosch GmbH. Detecting a rapid change of a critical physical condition. 4,543,570, Cl. 340-589.000.

Brewer, Ronald W., to Instrument Specialties Co., Inc. Electromagnetic shielding device. 4,543,447, Cl. 174-35.0GC.

Bridgestone Corporation: *See*—
Abe, Norio; and Kawahara, Yoshiaki, 4,543,149, Cl. 156-350.000.

Bridgestone Tire Co. Ltd.: *See*—
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,543,050, Cl. 425-28.00D.

Briggs, Peter J.; McAloon, Kevin; and Rideal, Graham R., to Imperial Chemical Industries Limited. Fibrous material comprised of vermiculte coated fibers. 4,543,287, Cl. 428-288.000.

Brine, Gerald T., to McDonnell Douglas Corporation. Flap mechanism. 4,542,869, Cl. 244-216.000.

Brissette, Ronald N.; and Kumbier, Richard L., to Rockwell International Corporation. Center bearing assembly. 4,542,996, Cl. 384-536.000.

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Else, Robert F., 4,542,919, Cl. 280-804.000.

British Broadcasting Corporation: *See*—
Oliphant, Andrew, 4,543,598, Cl. 358-11.000.

British Petroleum p.l.c., The: *See*—
Heyward, Malcolm P.; and Young, Dennis, 4,543,347, Cl. 502-61.000.

Britsch, Heinz; Klenk, Martin; Linder, Ernst; and Moser, Winfried, to Robert Bosch GmbH. Internal combustion engine operating control system and method. 4,542,727, Cl. 123-435.000.

Brittingham, Donald; Fletcher, George P.; and Henry, Harvey J., to Du Pont de Nemours, E. I., and Company. Leak containment kit. 4,542,764, Cl. 137-347.000.

Brockhaus, Ernst, to Fa. ED. Schwarachter GmbH & Co. KG. Unhingeable door hinge joint having a hinge pin with a nonrotatable portion and a relatively rotatable portion. 4,542,558, Cl. 16-263.000.

Brodi, George: *See*—
Berczik, Douglas M.; Brodi, George; and O'Connell, Thomas E., 4,543,132, Cl. 148-11.50F.

Brodsky, Stuart A. Catheter and drain tube retainer. 4,543,100, Cl. 604-180.000.

Brogan, Patrick M.: *See*—
Holcombe, Robert R.; Parks, Steven G.; and Brogan, Patrick M., 4,542,708, Cl. 114-243.000.

Brogdon, James W.: *See*—
Allen, Kenneth D.; Brogdon, James W.; Barton, John S.; and Hicks, Raymond J., 4,542,658, Cl. 73-862.310.

Bronicki, Lucien Y. Geothermal power plant and method for operating the same. 4,542,625, Cl. 60-641.200.

Brooker, Lenon G.; and Jarrell, Donald L., to Westinghouse Electric Corp. Chemical resistant decorative laminates. 4,543,290, Cl. 428-336.000.

Brooks, David, to Thorn EMI Ferguson Limited. Video recording and display equipment. 4,543,616, Cl. 358-335.000.

Brotsky, Eugene, to Stauffer Chemical Company. Process for curing bacon, product thereof and composition therefor. 4,543,260, Cl. 426-266.000.

Brower, Ben C., to A. W. Manufacturing Inc. Method for filleting fish. 4,542,559, Cl. 17-46.000.

Brown Coal Corporation: *See*—
Brown, George E., Jr.; and Hoppert, Bruce N., 4,543,104, Cl. 44-1.0SR.

Brown, George E., Jr.; and Hoppert, Bruce N., to Brown Coal Corporation. Coal treatment method and product produced therefrom. 4,543,104, Cl. 44-1.0SR.

Brown, Gregory N.: *See*—
Kennedy, Robert J., Jr.; Smith, Kendall S., II; and Brown, Gregory N., 4,542,822, Cl. 206-45.330.

Brown, Laurence A.: *See*—
Seyb, Edgar J., Jr.; and Brown, Laurence A., 4,543,167, Cl. 204-51.000.

Brown, Melvin H.; and DeYoung, David H., to Aluminum Company of America. Three-stage process for burning fuel containing sulfur to reduce emission of particulates and sulfur-containing gases. 4,542,704, Cl. 110-347.000.

Brown, William J.; and Parks, John M., to Caterpillar Tractor Co. Deflectable unitary latch. 4,542,924, Cl. 292-87.000.

Brown & Williamson Tobacco Corporation: *See*—
Cantrell, Daniel V.; and Johnson, Robert R., 4,542,754, Cl. 131-336.000.

Bruckhoff, Wolfgang: *See*—
Peter, Siegfried; Hartel, Georg; and Bruckhoff, Wolfgang, 4,543,193, Cl. 252-8.55B.

Brunnmueller, Fritz; and Kroener, Michael, to BASF Aktiengesellschaft. α-iminodiacetonitriles and their preparation. 4,543,215, Cl. 260-465.50R.

Bryand, Edward T.; and Randall, Kenneth R., to Honeycomb Systems, Inc. Honeycomb grilled conduit. 4,542,596, Cl. 34-115.000.

Buck, Robert; and Lamarche, Jean L., to IFM Electronic GmbH. Electronic monitoring system with selective signal inversion. 4,543,497, Cl. 307-308.000.

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Budapesti Radiotechnikai Gyar: *See*—
Nemet, Mihaly, 4,543,581, Cl. 343-702.000.

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Buky, Gabriel R.: *See*—
Littwin, Kenneth M.; and Buky, Gabriel R., 4,542,909, Cl. 280-79.10A.

Bullemer, Bernhard: *See*—
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Bulley, Raymond M., to AT&T Bell Laboratories. Biased reactor maintenance termination unit. 4,543,524, Cl. 324-52.000.

Bunnelle, William L.; and Lindmark, Richard C., Jr., to H. B. Fuller Company. Method for imparting elastic properties to a flexible substrate. 4,543,099, Cl. 604-385.00A.

Burch, Donald F.: *See*—
Bethell, George L.; Burch, Donald F.; and Hinkhouse, Lysle R., 4,542,887, Cl. 264-46.400.

Burckhardt, Christophe W.; Fournier, Jacques; and Stauber, Philippe, to Tesa S.A. Capacitive device for the measurement of displacements. 4,543,526, Cl. 324-61.00R.

Burget, Paul; and Zortea, Michel, to Saint-Gobain Vitrage. Method for producing molten glass. 4,543,117, Cl. 65-135.000.

Burgin, Kermit H. Surgical instrument with incorporated lighting system. 4,542,741, Cl. 128-303.100.

Burndy Corporation: *See*—
Anderson, James D.; and Crossin, Patrick, 4,542,583, Cl. 29-749.000.

Bursa. Miloslav: *See*—
Sladck, Zdenek; Musil, Frantisek; Podmela, Ladislav; and Bursa, Miloslav, 4,542,664, Cl. 74-804.000.

Burstain, Israel G.; and Goodall, Brian L., to Shell Oil Company. Copolymerization catalyst and process for polymerizing impact resistant ethylene-propylene polymers. 4,543,389, Cl. 525-53.000.

Bushway, Geoffrey C. Pre-made reinforcement device. 4,543,065, Cl. 433-221.000.

Butaeva, Tatyana I.: *See*—
Petrosian, Ashot G.; Kuzanian, Armen S.; Ovanesian, Karine L.; Butaeva, Tatyana I.; Shirinian, Grigory O.; and Avetisian, Ashot A., 4,543,342, Cl. 501-86.000.

Byrd, Vernon H.: *See*—
Romike, Robert G.; and Byrd, Vernon H., 4,542,862, Cl. 242-96.000.

C. A. Weidmuller GmbH & Co.: *See*—
Wiener, Hans; and Undin, Hans, 4,542,668, Cl. 81-355.000.

C-I-L Inc.: *See*—
Jones, Frederick W. S.; and Smith, Frank, 4,543,244, Cl. 423-522.000.

Calcavecchio, Peter: *See*—
Drake, Evelyn N.; and Calcavecchio, Peter, 4,542,791, Cl. 166-291.000.

Caldwell, Allan L.; Hardy, Richard; and Neumann, Frank D., to Boeing Company, The. Aircraft with directional controlling canards. 4,542,866, Cl. 244-45.00A.

Callahan, James F.; Moore, Michael L.; and Yim, Nelson C., to Smith-Kline Beckman Corporation. Basic heptapeptide vasopressin antagonists. 4,543,349, Cl. 514-11.000.

Calnek, Trevor A.: *See*—
Osmera, Miroslav S.; Huynh, Van-Minh; and Calnek, Trevor A., 4,542,998, Cl. 400-139.000.

Cama, Lovji D.; and Christensen, Burton G., to Merck & Co., Inc. 1-Carba-2-penem-3-carboxylic acid. 4,543,257, Cl. 514-210.000.

Campbell, Henry F.: *See*—
Kuhla, Donald E.; Campbell, Henry F.; and Studt, William L., 4,543,352, Cl. 514-212.000.

Campbell Soup Company: *See*—
Goldhahn, Stephen L., 4,543,263, Cl. 426-520.000.

Canadian Patents and Development Limited: *See*—
Riley, Victor, 4,543,012, Cl. 405-71.000.

Cannady, John P., to Dow Corning Corporation. Silicon nitride-containing ceramic material prepared by pyrolysis of hydrosilazane polymers from $(R_3Si)_2NH$ and $HSiCl_3$. 4,543,344, Cl. 501-92.000.

Canon Kabushiki Kaisha: *See*—
Fukui, Hiroshi, 4,543,588, Cl. 346-76.0PH.
Honma, Toshio; Takeda, Hiroaki; and Suzuki, Tadashi, 4,542,985, Cl. 355-69.000.
Kasamura, Toshirou, 4,542,976, Cl. 355-3.00R.
Kurahayashi, Sadasuke, 4,543,611, Cl. 358-260.000.

Murakawa, Kazunori; Mitsuhashi, Yasuo; Uchide, Hitoshi; Takagi, Seiichi; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; and Imai, Eiichi, 4,543,312, Cl. 430-107.000.
Sato, Yasuhisa, 4,542,961, Cl. 350-475.000.
Suzuki, Ryoichi; and Tokuda, Ryuji, 4,542,970, Cl. 354-400.000.
Tajima, Hatsuo, 4,542,980, Cl. 355-14.0FU.
Takahashi, Yuji, 4,542,896, Cl. 271-111.000.
Tateoka, Masamichi; Asano, Junichi; Kurata, Mitsuru; and Yokomizo, Yoshikazu, 4,543,491, Cl. 250-578.000.
Tazaki, Shigemitsu; and Kyogoku, Hiroshi, 4,543,590, Cl. 346-140.00R.
Terasawa, Koji, 4,543,589, Cl. 346-140.00R.
Terasawa, Koji, 4,543,591, Cl. 346-140.00R.
Yamada, Tateo; Kimura, Hiroyuki; and Taka, Hideo, 4,542,865, Cl. 242-205.000.
Yoshikawa, Ryoichi; Ohmori, Kouichi; and Watanabe, Isao, 4,542,974, Cl. 354-415.000.

Cantrell, Daniel V.; and Johnson, Robert R., to Brown & Williamson Tobacco Corporation. Filtered cigarette. 4,542,754, Cl. 131-336.000.

Cantrell, David D. Fry basket and separator insert system. 4,542,684, Cl. 99-403.000.

Capella, Joseph A., to Recovery Technology, Inc. Product separation and recovery system. 4,543,165, Cl. 203-89.000.

Capuano, Terry D., to Russell, Burdsall & Ward Corporation. Fastener. 4,543,023, Cl. 411-180.000.

Caracteres S.A.: *See—*
Bauer, Eric; and Moulin, Blaise, 4,542,999, Cl. 400-175.000.

Carborundum Abrasives Company: *See—*
Parekh, Dhan N., 4,543,106, Cl. 51-295.000.

Carey, Richard A.; and Falk, Jerry, to Honeywell Information Systems Inc. Apparatus for maximizing bus utilization. 4,543,629, Cl. 364-200.000.

Carlson, Chester O., to Illinois Tool Works Inc. Adhesive dispensing system. 4,543,148, Cl. 156-314.000.

Carlson, Ronald L.; and Seale, Edward G., to Hallmark Cards, Inc. Ornament assembly. 4,542,676, Cl. 84-94.00C.

Cartabbia, Giovanni. Trousers ironing machine with automatic trousers pickup. 4,542,601, Cl. 38-7.000.

Cartwright, Earl. Aerodynamically stable surface riding weedless fishing lure. 4,542,607, Cl. 43-42.520.

Cartwright, William F.: *See—*
Selke, William A.; and Cartwright, William F., 4,542,755, Cl. 131-370.000.

Cary, Allan P. Device for removing debris from gutters. 4,542,553, Cl. 15-236.00R.

Caselgrandi, Ivo; and Palmieri, Beniamino. Syringe for use in hypodermic biopsy, featuring automatic plunger-return. 4,542,749, Cl. 128-752.000.

Casper, Paul W.: *See—*
Bent, Rodney B.; and Casper, Paul W., 4,543,580, Cl. 343-460.000.

Castrol Limited: *See—*
Sparks, David J.; Whitefoot, Keith; and Knubley, John S., 4,542,836, Cl. 222-27.000.

Caterpillar Tractor Co.: *See—*
Anders, Gene A., 4,542,786, Cl. 165-144.000.
Brown, William J.; and Parks, John M., 4,542,924, Cl. 292-87.000.
Richards, David L.; and Windish, Willis E., 4,542,801, Cl. 180-53.100.
Williams, Hugh K., 4,542,721, Cl. 123-179.00K.

Cawley, Peter; and Adams, Robert D., to National Research Development Corporation. Testing of structures by impact. 4,542,639, Cl. 73-12.000.

CD Medical, Inc.: *See—*
Chen, David T.; and Mahoney, Robert D., 4,543,221, Cl. 264-41.000.

Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, to Pfizer Inc. Streptomyces capable of producing neutral macrolide antibacterial agents. 4,543,334, Cl. 435-253.000.

CEM-Compagnie Electro-Mecanique et Compagnie: *See—*
Guilloux, Bernard, 4,543,518, Cl. 318-757.000.

Central Glass Company, Limited: *See—*
Aramaki, Minoru; Kobayashi, Yoshiyuki; Nakamura, Tamio; Nakano, Hisaji; and Suenaga, Takashi, 4,543,242, Cl. 423-406.000.

Ceramic Cooling Tower Company: *See—*
Bardo, Charles J.; Seawell, Jesse Q.; Dylewski, Anthony J.; and Clark, John L., Jr., 4,543,218, Cl. 261-24.000.

Cham-Co Plastic Industries Inc.: *See—*
St. Louis, Andre , 4,542,912, Cl. 280-433.000.

Chan, Ming K. Portable gas fired barbecue. 4,542,733, Cl. 126-41.00R.

Chang, Clarence D., to Mobil Oil Corporation. Process for producing liquid hydrocarbon fuels. 4,543,434, Cl. 585-310.000.

Chang, Shih-Jeh, to AT&T Bell Laboratories. Duplicated time division switching system. 4,543,651, Cl. 370-16.000.

Chang, Wen-Hsuan: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,543,405, Cl. 528-78.000.

Chao, Vivian W.; Kaufman, Frank B.; Kramer, Steven R.; and Lin, Burn J., to International Business Machines Corporation. Polystyrene-tetrathiafulvalene polymers as deep-ultraviolet mask material. 4,543,319, Cl. 430-312.000.

Charbonnages de France: *See—*
Dreuilhe, Jacques; Puff, Roger; Kita, Jean-Claude; and Large, Jean-Francois, 4,542,716, Cl. 122-4.00D.

Charbonneau, Arthur G.; Godfrey, Dwaine A.; McNennamy, John A.; and Nafziger, Steven, to Charbonneau and Godfrey Associates. Motor operated valve analysis and testing system. 4,542,649, Cl. 73-168.000.

Charbonneau and Godfrey Associates: *See—*
Charbonneau, Arthur G.; Godfrey, Dwaine A.; McNennamy, John A.; and Nafziger, Steven, 4,542,649, Cl. 73-168.000.

Checchetti, Maurizio. Method and an apparatus for controlling a.c. rotating machinery power plants. 4,543,513, Cl. 318-158.000.

Chemie Linz Aktiengesellschaft: *See—*
Schnell, Peter; Bihlmayer, Gustav; and Daume, Dietrich, 4,543,145, Cl. 156-231.000.

Chemische Werke Huels A.G.: *See—*
Balzer, Dieter, 4,542,790, Cl. 166-274.000.

Chen, David T.; and Mahoney, Robert D., to CD Medical, Inc. Method for making cellulose semipermeable hollow fibers. 4,543,221, Cl. 264-41.000.

Chen, Keming J., to RCA Corporaton. Video sync validity detector. 4,543,614, Cl. 358-193.100.

Chen, Shuenn-tzong, to Miles Laboratories, Inc. Wipe-off test device. 4,543,338, Cl. 436-170.000.

Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., to James River-Norwalk, Inc. Method for manufacture of a non-woven fibrous web. 4,543,156, Cl. 162-101.000.

Chevron Research Company: *See—*
Ergas, Raymond A.; and Muir, Francis, 4,543,632, Cl. 364-421.000.

Chiba, Ko; Wada, Yoshiaki; Miida, Hiroshi; and Ono, Sumio, to Kabushiki Kaisha Riken. Corrugated expander for piston ring assembly. 4,542,907, Cl. 277-140.000.

Chiba, Tatsuya: *See—*
Suhara, Akito; Takasugi, Kazuhiko; Sato, Toshihide; Ono, Masashi; Higuchi, Kazuo; and Chiba, Tatsuya, 4,543,378, Cl. 524-100.000.

Chiba, Tomosuke; Kato, Hiroshi; and Suganuma, Takashi, to Sony Corporation. Liquid cooled cathode ray tube with reduced internal reflectance. 4,543,510, Cl. 313-477.00R.

Chlorine Engineers Corp. Ltd.: *See—*
Kasuya, Kazuki, 4,543,265, Cl. 427-34.000.

Choc, Anton: *See—*
Plapp, Charles D.; and Choc, Anton, 4,542,537, Cl. 2-148.000.

Choe, David. Air jack for use with a vehicle exhaust system. 4,542,882, Cl. 254-93.0HP.

Choe, Jei S. Fuel vaporization system for an internal combustion engine. 4,542,717, Cl. 123-25.00B.

Chow, Michael: *See—*
Bean, Robert; Gardner, Edward A.; Chow, Michael; Rubinson, Barry L.; Lary, Richard F.; and Blackledge, Robert, 4,543,626, Cl. 364-200.000.

Christensen, Burton G.: *See—*
Cama, Lovji D.; and Christensen, Burton G., 4,543,257, Cl. 514-210.000.

Christinger, Werner, to Becton, Dickinson and Company. Variable sealing pressure plunger rod assembly. 4,543,093, Cl. 604-228.000.

Ciba-Geigy AG: *See—*
Defago, Raymond; and Bauerle, Rolf, 4,543,102, Cl. 8-471.000.
Somlo, Tibor; and Regli, Johann, 4,543,214, Cl. 260-384.000.

CIC Int'l. Corp.: *See—*
Levine, Morris M., 4,542,557, Cl. 15-344.000.

Cicin-Sain, Ivo, to Matisa Materiel Industriel S.A. Train for laying a new railroad track. 4,542,697, Cl. 104-2.000.

Clarion Co., Ltd.: *See—*
Minagawa, Shoichi; and Okamoto, Takeshi, 4,543,533, Cl. 330-5.500.

Clark, John L., Jr.: *See—*
Bardo, Charles J.; Seawell, Jesse Q.; Dylewski, Anthony J.; and Clark, John L., Jr., 4,543,218, Cl. 261-24.000.

Claudius Peters: *See—*
Krauss, Werner; and Vogt, Heinrich, 4,542,991, Cl. 366-106.000.

Clause, Marvin B., Jr.; and Thompson, Callie R., to Bell & Howell Company. Overlapping document strip conveying method and apparatus. 4,542,893, Cl. 270-52.500.

Claytor, Thomas N.; and Karplus, Henry B., to United States of America, Energy. Void/particulate detector. 4,542,644, Cl. 73-61.00R.

Clifford, Paul K. Selective gas detection and measurement system. 4,542,640, Cl. 73-23.000.

Cobb, Albert R., III; and Black, Charles E., to Indak Manufacturing Corp. Slide action electrical switches. 4,543,454, Cl. 200-16.00A.

Coburn Optical Industries, Inc.: *See—*
Petcen, Donald H., 4,543,146, Cl. 156-242.000.

Coffey, Gerald P.: *See—*
Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., 4,543,407, Cl. 528-336.000.

Cohen, Howard. Elastomeric impression material for tooth and supporting structure duplication. 4,543,063, Cl. 433-175.000.

Colantuoni, Giovanni: *See—*
Foss, Stephen D.; and Colantuoni, Giovanni, 4,543,446, Cl. 174-11.00R.

Colford, Terence H., to Dunlop Limited. Flexible couplings. 4,543,075, Cl. 464-76.000.

Colgate-Palmolive Company: *See—*
Gervasio, Gregorio C., 4,543,204, Cl. 252-531.000.
Misevich, Kenneth W.; Cross, Henry D., III; Dube, Roland E.; and McGregor, Rob R., 4,542,598, Cl. 36-114.000.

Colin, Pierre, to Societe Francaise de Stockage Geologique GEOSTOCK. Method and apparatus for underground storage of ammonia and analogous products. 4,542,626, Cl. 62-45.000.

Collings, John: *See—*
Smith, Kenneth G.; and Collings, John, 4,542,735, Cl. 126-129.000.

Colorcon, Inc.: *See*—
Porter, Stuart C.; and Woznicki, Edward J., 4,543,370, Cl. 523-100.000.

Comitato Nazionale per l'Energia Nucleare: *See*—
Scuricini, Giovan B., 4,543,463, Cl. 219-121.0LH.

Commissariat a l'Energie Atomique: *See*—
Audoin, Marcel; Fedeli, Jean-Marc; and Poujois, Robert, 4,543,564, Cl. 340-365.00C.

Condell, William J., Jr., to United States of America, Navy. Free electron laser device for scanning a spatial field. 4,543,655, Cl. 372-2.000.

Confon AG: *See*—
Ippen, Heiko, 4,543,452, Cl. 179-90.00B.

Conma, N.V.: *See*—
Tilly, Adolphe J. G., 4,543,055, Cl. 431-12.000.

Conoco Inc.: *See*—
Beck, Jeffrey L., 4,542,775, Cl. 141-65.000.
Beck, Jeffrey L., 4,543,017, Cl. 406-31.000.
Edwards, Don L., 4,543,061, Cl. 432-115.000.
Harris, Gary R.; and Oda, Ronald L., 4,543,018, Cl. 406-102.000.
Salama, Mamdouh M.; and Pan, Robert B., 4,543,008, Cl. 403-174.000.

Constans, Bernard: *See*—
Grangette, Henri; Constans, Bernard; and Maldonado, Paul, 4,543,195, Cl. 252-33.400.

Contamin, Jean-Claude, to Societe Anonyme dite: L'Oreal. Cosmetic cleansing composition particularly for removal of eye make-up. 4,543,205, Cl. 252-546.000.

Continental Gummi-Werke Aktiengesellschaft: *See*—
Thielemann, Klaus; and Trabandt, Hagen, 4,542,778, Cl. 152-209.00R.

Cook, Robert D., to Crane Co. Modulator for anti-skid braking system. 4,543,633, Cl. 364-426.000.

Cookerly, Jack C.: *See*—
Hall, Robert J., Jr.; Hall, George R.; and Cookerly, Jack C., 4,542,675, Cl. 84-1.030.

Corabelment A.G.: *See*—
Rumble, Clive S., 4,543,624, Cl. 363-146.000.

Cordis Corporation: *See*—
DeHaan, Abel; and MacGregor, David C., 4,542,752, Cl. 128-784.000.
DeHaan, Abel, 4,543,304, Cl. 429-91.000.

Corey, Paul F.; and Kluender, Harold C., to Miles Laboratories, Inc. Conjugate addition of organocuprates generated from copper (I) cyanide and vinyl stannanes useful in prostaglandin analog synthesis. 4,543,421, Cl. 560-106.000.

Corrugating Roll Corporation: *See*—
Sukenik, Robert J., 4,542,566, Cl. 29-125.000.

Costa, Peter F.; and Whiteside, George D., to Polaroid Corporation. Camera erecting assembly. 4,542,967, Cl. 354-187.000.

Couch, Philip R., to International Telephone and Telegraph Corporation. Direct current coupled data transmission. 4,543,664, Cl. 455-601.000.

Coue, Maurice E. L., to Huret et ses Fils. Pedal crank derailleur for a bicycle. 4,543,078, Cl. 474-82.000.

Coulter Stork Patents B.V.: *See*—
Percic, Milan, 4,542,979, Cl. 355-4.000.

Coutures, Jean-Louis, to Thomson-CSF. Analog-to-digital correlator with programmable coefficients with values of +1, −1 or 0. 4,543,640, Cl. 364-604.000.

Craine, Richard W.; and Drabick, Joseph P., to ITT Corporation. Microwave radio frequency power divider/combiner. 4,543,545, Cl. 333-128.000.

Crane Co.: *See*—
Cook, Robert D., 4,543,633, Cl. 364-426.000.

Crawford, John F.: *See*—
Betts, Robert E.; Crawford, John F.; and Meador, Jacqueline C., 4,542,695, Cl. 102-378.000.

Creusot-Loire: *See*—
Dreuilhe, Jacques; Puff, Roger; Kita, Jean-Claude; and Large, Jean-Francois, 4,542,716, Cl. 122-4.00D.

Crook, Dwight L.: *See*—
Mohsen, Amr M.; and Crook, Dwight L., 4,543,594, Cl. 357-51.000.

Cross, Henry D., III: *See*—
Misevich, Kenneth W.; Cross, Henry D., III; Dube, Roland E.; and McGregor, Rob R., 4,542,598, Cl. 36-114.000.

Crossin, Patrick: *See*—
Anderson, James D.; and Crossin, Patrick, 4,542,583, Cl. 29-749.000.

Crossman, James A., to Polysar Limited. Polymer-fibre mixture process. 4,543,377, Cl. 524-13.000.

Crossman, Richard L., to Goodyear Aerospace Corporation. Electrically actuated aircraft brakes. 4,542,809, Cl. 188-72.800.

Crouch, Robert C., to Adria Laboratories, Inc. Valve device to aid in reconstituting injectable powders. 4,543,101, Cl. 604-411.000.

Crown Controls Corporation: *See*—
Luebrecht, Donald; and Thobe, Nicholas D., 4,543,031, Cl. 414-631.000.

Crown Zellerbach Corporation: *See*—
Reba, Imants, 4,542,842, Cl. 225-2.000.

Crude Oil Quality Control Corporation of Michigan: *See*—
Bounds, Jerry O., 4,543,083, Cl. 494-4.000.

Cruz, Jr., Mamerto M., to Morca, Inc. Absorbent cellulosic base structures. 4,543,410, Cl. 536-84.000.

CSELT-Centro Studi E Laboratori Telecommunicazioni S.p.A.: *See*—
Belforte, Piero; Bondonno, Mario; Bostica, Bruno; and Pilati, Luciano, 4,543,653, Cl. 370-66.000.

Csepel Muvek Szerszamgepgyara: *See*—
Joo, Istvan; Schutz, Lajos; Sarosi, Jozsef; Szabo, Sandor P.; Taal, Janos; and Szebenyi, Otto , 4,543,635, Cl. 364-474.000.

Cullen, Walter P.: *See*—
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,543,334, Cl. 435-253.000.

Cunningham, Donald M., to Emerson Electric Co. Grounding arrangement for metal sheathed heating element having a plastic mounting member. 4,543,469, Cl. 219-336.000.

Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., to Standard Oil Company, The. Catalytic process for the manufacture of polyamides from diamines and diamides. 4,543,407, Cl. 528-336.000.

Curtze, Edward W.; and Herliczek, Siegfried H., to Libbey-Owens-Ford Company. Encapsulated glazing product. 4,543,283, Cl. 428-38.000.

Cusack, Robert F., to GTE Valeron Corporation. Two axis touch probe. 4,542,590, Cl. 33-169.00R.

Custom Engineering and Manufacturing Corp.: *See*—
Glasgow, Clarence; and Alberty, Randall W., 4,542,765, Cl. 137-390.000.

Cuthbertson, Robert H.: *See*—
Olsen, Ralph A.; and Cuthbertson, Robert H., 4,543,070, Cl. 441-5.000.

CX Corporation: *See*—
Aldo, Bruce D., 4,543,151, Cl. 156-502.000.

Cymatics, Inc.: *See*—
Stanley, William W.; and Mikyska, Glenn E., 4,543,493, Cl. 307-126.000.

Czermak, Ladislaus; Steinhart, Winfried; Binder, Karl-Franz; and Steinhart, Paul, to Binder, Karl-Franz. Industrial robot. 4,543,033, Cl. 414-732.000.

D P Sales, Inc.: *See*—
Pilzer, Daniel C., 4,542,827, Cl. 206-483.000.

Daga, Andrew. System for forming structural concrete. 4,542,612, Cl. 52-337.000.

D'Agostino, Vincent F.; Lee, Joseph Y.; Zapisek, Stephen; and Schore, George, to RAI Research Corporation. Gold recovery process. 4,543,169, Cl. 204-105.00R.

Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Nozaka, Yoshiki, 4,543,152, Cl. 156-502.000.

D'Aiello, Robert V.: *See*—
Firester, Arthur H.; and D'Aiello, Robert V., 4,543,171, Cl. 204-129.300.

Daikin Industries, Ltd.: *See*—
Fujimoto, Yuji; Aono, Masayuki; Nakano, Tetuo; and Nakabayashi, Teiji, 4,542,783, Cl. 165-30.000.

Daimler-Benz Aktiengesellschaft: *See*—
Huber, Guntram; Fischer, Wolfgang; and Klie, Wolfgang, 4,542,925, Cl. 293-120.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Sakamoto, Takashi, 4,543,613, Cl. 358-298.000.

Dalby, Kenneth G.: *See*—
Day, George W.; and Dalby, Kenneth G., 4,543,658, Cl. 377-8.000.

Daly, John J., Jr.: *See*—
Bartlett, Philip L.; Daly, John J., Jr.; and Sterling, John D., Jr., 4,543,202, Cl. 252-305.000.

Dantowitz, Philip; Balko, Edward N.; and McElroy, James F., to United Technologies Corporation. Fuel cell battery with in cell oxidant-product liquid separators. 4,543,303, Cl. 429-34.000.

Danz, George E.; and Shuler, C. Calvin, to Kollmorgen, Technologies Corporation. Induction motor slip control. 4,543,520, Cl. 318-807.000.

d'Argembeau, Etienne Y. Toothbrushes. 4,542,552, Cl. 15-167.00R.

Datacopy Corporation: *See*—
Lindberg, Charles A.; Maclay, William R.; and Merritt, Lauren V., 4,543,621, Cl. 360-77.000.

Daum, Joachim; Siewert, Gerhard; Topert, Michael; and Seliger, Hartmut, to Schering Aktiengesellschaft. Process for the specific cleavage of protein sequences from proteins. 4,543,329, Cl. 435-69.000.

Daume, Dietrich: *See*—
Schnell, Peter; Bihlmayer, Gustav; and Daume, Dietrich, 4,543,145, Cl. 156-231.000.

Day, George W.; and Dalby, Kenneth G., to Vacuumatic Limited. Sheet separating device for a sheet counting apparatus. 4,543,658, Cl. 377-8.000.

Day, Ralph K. Double glass sheet insulating windows. 4,542,611, Cl. 52-172.000.

Dazza, Renald A., to Bayshore Tile Company. Cleating apparatus. 4,542,831, Cl. 211-90.000.

De La Rue Systems Limited: *See*—
Emery, Stephen G.; and Humble, Rick J., 4,542,829, Cl. 209-534.000.

DeBaun, Linda M.: *See*—
DeBaun, William A.; and DeBaun, Linda M., 4,542,875, Cl. 248-491.000.

DeBaun, William A.; and DeBaun, Linda M. Rim protector for hanging plates. 4,542,875, Cl. 248-491.000.

Dechow, Frederick J.: *See*—
Harmon, Zita T. K.; and Dechow, Frederick J., 4,543,261, Cl. 426-271.000.

Deere & Company: *See*—
Giesmann, Kendall L., 4,542,913, Cl. 280-479.00A.

Defago, Raymond; and Bauerle, Rolf, to Ciba-Geigy AG. Aqueous printing inks for transfer printing containing polyvinyl alcohol and acrylate polymer. 4,543,102, Cl. 8-471.000.

Defeuilly, Jean P.; and Nguyen-Van-Nguyen, Jean, to U.S. Philips Corporation. Frequency synthesizer for a transmitter-receiver. 4,543,661, Cl. 455-76.000.

DeGraw, Joseph I., Jr.: *See—*
Berger, Frank M.; DeGraw, Joseph I., Jr.; and Johnson, Howard L., 4,543,362, Cl. 514-480.000.

Degussa Aktiengesellschaft: *See—*
von Angerer, Erwin; and Schonenberger, Helmut, 4,543,360, Cl. 514-415.000.

DeHaan, Abel; and MacGregor, David C., to Cordis Corporation. Implantable device having porous surface with carbon coating. 4,542,752, Cl. 128-784.000.

DeHaan, Abel, to Cordis Corporation. Lithium cell having depletion gauge. 4,543,304, Cl. 429-91.000.

Del Norte Technology, Inc.: *See—*
Kovach, John P., 4,543,530, Cl. 328-108.000.

Delay, Francois: *See—*
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre, 4,543,429, Cl. 568-446.000.

Delbarre, Jean, to Electricite de France. Process and device for drilling the soil. 4,542,796, Cl. 175-19.000.

Delivorias, Peter, to Prime Computer, Inc. Method of fabricating n-type silicon regions and associated contacts. 4,542,580, Cl. 29-590.000.

Demny, Florian C.: *See—*
Stewart, Thomas L.; and Demny, Florian C., 4,543,191, Cl. 210-746.000.

Densch, Dietrich. Stepped-disc pump. 4,543,048, Cl. 418-191.000.

DeRoos, Donald J. Insulating assembly for animal waterers. 4,542,715, Cl. 119-72.000.

Deschepper, Pierre: *See—*
Robyn, Pierre; and Deschepper, Pierre, 4,542,888, Cl. 266-44.000.

Desgagnes, Arthur. Heat recuperator adapted to a shower-cabin. 4,542,546, Cl. 4-598.000.

Desilets, David E.: *See—*
Marino, Jerry C.; and Desilets, David E., 4,542,872, Cl. 248-183.000.

de Stecker, Hans: *See—*
Van Campenhout, Jan; de Stecker, Hans; Notredame, Paul; Muyle, Eddy; Bergmans, Jean-Paul; and Bergmans, Patrick, 4,543,615, Cl. 358-285.000.

Deubel, Reinhold: *See—*
Schneider, Manfred; Deubel, Reinhold; and Zimmermann, Manfred, 4,543,380, Cl. 524-159.000.

Deurloo, Johannis M., to N. K. F. Groep B.V. Electrical cord set having a magnetically identifiable conductor, and a method of automatically manufacturing such a cord set. 4,543,448, Cl. 174-112.000.

DeVaughn, Donald H., to Bio-Plas, Inc. Stretchable cap for sealing and/or resealing blood drawing tubes and the like. 4,542,833, Cl. 215-319.000.

DeYoung, David H.: *See—*
Brown, Melvin H.; and DeYoung, David H., 4,542,704, Cl. 110-347.000.

Diamantoglou, Michael; Brandner, Alexander; and Meyer, Gerhard, to AKZO NV. Water-insoluble fibers of cellulose acetate, cellulose propionate and cellulose butyrate with an extremely high absorptive capacity for water and physiological liquids. 4,543,409, Cl. 536-68.000.

Diamond, Harvey E. Fluid valve with directional outlet jet of continuously changing direction. 4,542,853, Cl. 239-383.000.

Dick, Richard J.: *See—*
Rodgers, Stephen D.; Dick, Richard J.; and McGinnis, Vincent D., 4,543,418, Cl. 549-562.000.

Diem, Hans, to Transnuklear GmbH. Transportation and storage for nuclear fuel wastes. 4,543,488, Cl. 250-507.100.

Diesel Kiki Co., Ltd.: *See—*
Shibuya, Tsunenori, 4,543,049, Cl. 418-269.000.

Dietrich, William J., Sr., to DMI, Inc. One-pass complete tillage system. 4,542,793, Cl. 172-180.000.

Digital Equipment Corporation: *See—*
Bean, Robert; Gardner, Edward A.; Chow, Michael; Rubinson, Barry L.; Lary, Richard F.; and Blackledge, Robert, 4,543,626, Cl. 364-200.000.
Pomfret, Stephen T., 4,543,628, Cl. 364-200.000.

Digitized Information Systems Corp., n.v.: *See—*
Van Campenhout, Jan; de Stecker, Hans; Notredame, Paul; Muyle, Eddy; Bergmans, Jean-Paul; and Bergmans, Patrick, 4,543,615, Cl. 358-285.000.

Di Lena, Francesco: *See—*
Brandi, Roberto; Di Lena, Francesco; Vanore, Silvestro; Naess, Tor; and Schamaun, Paul U., 4,543,014, Cl. 405-207.000.

Dimple Tie Co., Inc.: *See—*
Plapp, Charles D.; and Choc, Anton, 4,542,537, Cl. 2-148.000.

Dipl.-Ing. Hanns Frohler: *See—*
Frohler, Hanns; and Rossberger, Erwin, 4,543,243, Cl. 423-478.000.

Di Salle, Enrico: *See—*
Faustini, Franco; Villa, Vittoria; Gandolfi, Carmelo; and Di Salle, Enrico, 4,543,353, Cl. 514-236.000.

Dittner, Adam; and Hartmann, Georg, to FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf aktien. Electric torque converter. 4,543,505, Cl. 310-102.00R.

DMI, Inc.: *See—*
Dietrich, William J., Sr., 4,542,793, Cl. 172-180.000.

Docdata N.V.: *See—*
Beaujean, Joseph M. E., 4,543,225, Cl. 264-167.000.

Dodge, Cleveland E., Jr. Removable double action rope grip. 4,542,884, Cl. 254-391.000.

Doebler, Klaus P.; Graf, Knut; Jager, Kurt E.; Johannsen, Friedrich; Ritz, Jurgen; and Saatweber, Dietrich, to Herberts Gesellschaft mit beschraenkter Haftung. Process for producing storable concentrates and their use for producing surface coatings. 4,543,375, Cl. 523-348.000.

Doi, Yuzuru; Hara, Masato; and Yoshihama, Hideo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Safety device for detecting trouble in optical transmission fibers. 4,543,477, Cl. 250-227.000.

Dolomite, S.p.A.: *See—*
Annovi, Giuseppe, 4,542,599, Cl. 36-117.000.

Dorn, Hubert: *See—*
von Bittera, Miklos; Federmann, Manfred; von Gizycki, Ulrich; Schapel, Dietmar; Stendel, Wilhelm; Voege, Herbert; and Dorn, Hubert, 4,543,247, Cl. 424-14.000.

Douke, Harumi: *See—*
Iwata, Masayosi; Douke, Harumi; and Sawada, Hiroyuki, 4,543,456, Cl. 200-61.540.

Dow Chemical Company, The: *See—*
Falardeau, Edward R., 4,543,127, Cl. 106-18.290.
Harmon, Zita T. K.; and Dechow, Frederick J., 4,543,261, Cl. 426-271.000.
Larson, David L., 4,543,414, Cl. 548-239.000.
Nankee, Robert J.; Vivian, Thomas A.; and Groves, Kenneth O., 4,543,364, Cl. 521-40.000.
Noding, Stephen A., 4,543,173, Cl. 204-263.000.
Phillips, Dorothy J., 4,543,357, Cl. 514-361.000.
Purinton, Robert J., Jr., 4,543,131, Cl. 134-8.000.
Treybig, Duane S.; and Swearingen, Loren L., 4,543,388, Cl. 524-597.000.

Dow Corning Corporation: *See—*
Cannady, John P., 4,543,344, Cl. 501-92.000.

Dowe, Claudia L.: *See—*
Kuntschik, Lawrence F.; and Dowe, Claudia L., 4,543,199, Cl. 252-75.000.

Drabick, Joseph P.: *See—*
Craine, Richard W.; and Drabick, Joseph P., 4,543,545, Cl. 333-128.000.

Draftex Development A.G.: *See—*
Weimar, Erich, 4,542,610, Cl. 49-491.000.

Dragerwerk Aktiengesellschaft: *See—*
Kleinschmidt, Lothar; Wallroth, Carl F.; and Harms, Heye, 4,542,740, Cl. 128-204.210.
Westrup, Bernhard, 4,543,336, Cl. 436-122.000.

Drake, Evelyn N.; and Calcavecchio, Peter, to Exxon Research & Engineering Company. Method for plugging wellbores with polycarboxylic acid shear thickening composition. 4,542,791, Cl. 166-291.000.

Dresser Industries, Inc.: *See—*
Wilson, Harold W.; and Wetterhorn, Richard H., 4,542,654, Cl. 73-741.000.

Dreuilhe, Jacques; Puff, Roger; Kita, Jean-Claude; and Large, Jean-Francois, to Creusot-Loire; Charbonnages de France; and Institut Francais du Petrole. Fluidized bed compact boiler. 4,542,716, Cl. 122-4.00D.

Drexler, Jerome; and Haddock, Richard, to Drexler Technology Corporation. Optical data storage and recording media having recording surface protection. 4,543,307, Cl. 430-12.000.

Drexler Technology Corporation: *See—*
Drexler, Jerome; and Haddock, Richard, 4,543,307, Cl. 430-12.000.

DRG (UK) Ltd.: *See—*
Dunn, David C.; and Scarrow, David, 4,542,743, Cl. 128-327.000.

Druschke, Wolfgang: *See—*
Blum, Rainer; Buensch, Hellmut; Druschke, Wolfgang; and Mueller, Helmut, 4,543,393, Cl. 525-124.000.

Dube, Roland E.: *See—*
Misevich, Kenneth W.; Cross, Henry D., III; Dube, Roland E.; and McGregor, Rob R., 4,542,598, Cl. 36-114.000.

Dubois, Jean C.; Tourillon, Gerard; and Garnier, Francis, to Thomson-CSF. Electrochemical device which can be used for energy storage. 4,543,306, Cl. 429-194.000.

Duchovni, Naum: *See—*
Bogwitz, Wolfram E. R.; Flecknoe-Brown, Anthony E.; and Duchovni, Naum, 4,543,054, Cl. 425-335.000.

Dunlop Limited: *See—*
Colford, Terence H., 4,543,075, Cl. 464-76.000.
Moore, Alan F., 4,543,010, Cl. 403-225.000.

Dunn, David C.; and Scarrow, David, to DRG (UK) Ltd. Vascular clamp. 4,542,743, Cl. 128-327.000.

Du Font de Nemours, E. I., and Company: *See—*
Bartlett, Philip L.; Daly, John J., Jr.; and Sterling, John D., Jr., 4,543,202, Cl. 252-305.000.
Bellis, Harold E., 4,543,424, Cl. 564-215.000.
Brittingham, Donald; Fletcher, George P.; and Henry, Harvey J., 4,542,764, Cl. 137-347.000.
Finlay, Joseph B.; and Ojakaar, Leo, 4,543,394, Cl. 525-276.000.
Levitt, George; and Wolf, Anthony D., 4,543,120, Cl. 71-93.000.
Loomis, Gary L., 4,543,440, Cl. 525-539.000.
Simmons, Walter J., 4,543,044, Cl. 417-342.000.

Durable Packaging Corporation: *See—*
Ulrich, Lawrence W.; and Walker, Connie W., 4,542,616, Cl. 53-137.000.

Duvdevani, Ilan: *See—*
Agarwal, Pawan K.; Duvdevani, Ilan; and Lundberg, Robert D., 4,543,385, Cl. 524-518.000.
Dylewski, Anthony J.: *See—*
Bardo, Charles J.; Seawell, Jesse Q.; Dylewski, Anthony J.; and Clark, John L., Jr., 4,543,218, Cl. 261-24.000.
E. D. Bullard Company: *See—*
Moretti, Anthony L.; and Pellolio, Anselmo P., Jr., 4,542,538, Cl. 2-438.000.
E. R. Squibb & Sons, Inc.: *See—*
Jensen, Ole R., 4,543,095, Cl. 604-246.000.
Eaton Corporation: *See—*
Schuchmann, Russell P.; and Van Zeeland, Donald L., 4,543,527, Cl. 324-207.000.
Eaton Laboratories, Inc.: *See—*
Ellis, Keith O.; and Moore, Alan F., 4,543,359, Cl. 514-390.000.
Eberhard, Jeffrey W.: *See—*
Barber, William D.; Eberhard, Jeffrey W.; and Karr, Steven G., 4,542,657, Cl. 73-861.250.
Ebner, Stephen R.: *See—*
Sidney, LuAnn; and Ebner, Stephen R., 4,543,268, Cl. 427-44.000.
Edamura, Kohji; Torii, Akio; Hattori, Katsuhide; and Sakai, Hiroshi, to Nippon Oil and Fats Co., Ltd. Water-in-oil emulsion explosive composition. 4,543,136, Cl. 149-21.000.
Edamura, Koji; Torii, Akio; Sato, Kazuyuki; and Sakai, Hiroshi, to Nippon Oil and Fats Co. Ltd. Water-in-oil emulsion explosive composition. 4,543,137, Cl. 149-21.000.
Edwards, Charles L.: *See—*
Henery, James D.; McHaney, Stephen C.; and Edwards, Charles L., 4,543,437, Cl. 585-857.000.
Henery, James D.; Edwards, Charles L.; and McHaney, Stephen C., 4,543,438, Cl. 585-857.000.
Edwards, Don L., to Conoco Inc. Air cooled rotary kiln feed end dam. 4,543,061, Cl. 432-115.000.
Effort, Wayne A. Disposable storage rack for cans or the like. 4,542,830, Cl. 211-49.100.
Eger, Matthias: *See—*
Knothe, Erich; Eger, Matthias; Stadler, Eberhard; and Engelhardt, Herbert, 4,542,800, Cl. 177-211.000.
Ehara, Kohei: *See—*
Itsumi, Manabu; Ehara, Kohei; Muramoto, Susumu; and Matsuo, Seitaro, 4,543,592, Cl. 357-43.000.
Ehret, Gordon F., to Sta-Rite Industries, Inc. Non-staining underwater light assembly for pools. 4,543,623, Cl. 362-267.000.
Ehrlich, Johann, to Patoflex Corporation. Process for producing a shoe sole having two wooden parts interconnected by a flexible polyurethane part beneath the ball of the foot. 4,543,222, Cl. 264-46.500.
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, to Novo Industri A/S. Liquid proteinase concentrate and method for preparation. 4,543,333, Cl. 435-188.000.
Eisai Co., Ltd.: *See—*
Kaneko, Takeru; Ozaki, Satoru; Takizawa, Kimie; and Sugimoto, Hachiro, 4,543,254, Cl. 514-253.000.
Eisele, Ignaz; Bullemer, Bernhard; and Beck, Andreas, to Balzers Aktiengesellschaft. Effusion type evaporator cell for vacuum evaporators. 4,543,467, Cl. 219-271.000.
Eisen, Herman N.: *See—*
Frackelton, A. Raymond, Jr.; Eisen, Herman N.; and Ross, Alonzo H., 4,543,439, Cl. 935-92.000.
Eisen- und Drahtwerk Erlau Aktiengesellschaft: *See—*
Muller, Anton; Konig, Hubert; and Wolfbeis, Ludwig, 4,542,779, Cl. 152-213.00A.
El Paso Products Company: *See—*
Henery, James D.; McHaney, Stephen C.; and Edwards, Charles L., 4,543,437, Cl. 585-857.000.
Henery, James D.; Edwards, Charles L.; and McHaney, Stephen C., 4,543,438, Cl. 585-857.000.
Electricite de France: *See—*
Delbarre, Jean, 4,542,796, Cl. 175-19.000.
Pichot, Jacky; and Oddou, Jacques, 4,542,849, Cl. 236-1.0EB.
Electro-Matic Products Co.: *See—*
Littwin, Kenneth M.; and Buky, Gabriel R., 4,542,909, Cl. 280-79.10A.
Elevator GmbH: *See—*
Halonen, Heino; Hetemaa, Kalevi; and Vainio, Frans, 4,543,026, Cl. 414-352.000.
Elf France: *See—*
Grangette, Henri; Constans, Bernard; and Maldonado, Paul, 4,543,195, Cl. 252-33.400.
Eli Lilly & Company: *See—*
Bollinger, David E.; and McCormick, Samuel L., 4,543,138, Cl. 156-69.000.
ELITEX, koncern textilniho strojirenstvi: *See—*
Kase, Oldrich; and Loucansky, Stanislav, 4,542,620, Cl. 57-302.000.
Elkem a/s: *See—*
Evensen, Knut, 4,543,656, Cl. 373-101.000.
Ellis, Arthur B.; and Streckert, Holger H., to Wisconsin Alumni Research Foundation. Semiconductor electrodes having regions of graded composition exhibiting photoluminescence and electroluminescence. 4,543,511, Cl. 315-169.300.
Ellis, Keith O.; and Moore, Alan F., to Eaton Laboratories, Inc. Treating cardiac arrhythmias with dantrolene sodium. 4,543,359, Cl. 514-390.000.
Elsasser, Friedrich, to Witzenmann GmbH Metallschlauch-Fabrik Pforzheim. Support spring blocking structure, and spring-structure combination. 4,542,877, Cl. 248-561.000.
Else, Robert F., to Britax (Wingard) Limited. Passive safety belt system. 4,542,919, Cl. 280-804.000.
ELTECH Systems Corporation: *See—*
Beer, Henri B.; Katz, Michael; and Hinden, Jean M., 4,543,174, Cl. 204-290.00R.
Beer, Henri B.; Hinden, Jean M.; Honard, Mark R.; Bishara, Jeries I.; and Walker, Joseph K., Jr., 4,543,348, Cl. 502-101.000.
Elter, Claus; Noll, Gerhard; Schoening, Josef; Schwiers, Hans-Georg; and Stracke, Wilfried, to Hochtemperatur-Reaktorbau GmbH. Gas cooled high temperature reactor. 4,543,232, Cl. 376-289.000.
Emerson, Clarence A. Drawing compass apparatus. 4,542,587, Cl. 33-27.00B.
Emerson Electric Co.: *See—*
Cunningham, Donald M., 4,543,469, Cl. 219-336.000.
Emery, Stephen G.; and Humble, Rick J., to De La Rue Systems Limited. Apparatus for sorting sheets according to their patterns. 4,542,829, Cl. 209-534.000.
Emhart Industries, Inc.: *See—*
Nebelung, Hermann H., 4,543,118, Cl. 65-360.000.
Emoto, Kanji: *See—*
Sudo, Fumio; Fujii, Tetsuya; Kato, Yoshiei; Yamada, Sumio; and Emoto, Kanji, 4,543,125, Cl. 75-51.500.
Endo, Hiroshi: *See—*
Tachibana, Akira; Fujiki, Norio; Endo, Hiroshi; Yamaki, Kiyoshi; and Kishi, Norimasa, 4,543,577, Cl. 340-904.000.
Endo, Keiji: *See—*
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,543,207, Cl. 252-570.000.
Endo, Yukio: *See—*
Harada, Nozomu; Endo, Yukio; Yoshida, Okio; and Matsunaga, Yoshiyuki, 4,543,489, Cl. 250-578.000.
Energy Conversion Devices, Inc.: *See—*
Vijan, Meera, 4,543,320, Cl. 430-314.000.
Engelhardt, Herbert: *See—*
Knothe, Erich; Eger, Matthias; Stadler, Eberhard; and Engelhardt, Herbert, 4,542,800, Cl. 177-211.000.
Engelhardt, Reiner; and Wittchow, Eberhard, to Kraftwerk Union Aktiengesellschaft. Method and plant for reheating flue gases behind a wet flue-gas desulfurization plant. 4,543,110, Cl. 55-27.000.
Ennyu, Katsusuke: *See—*
Yamamura, Yuichi; Azuma, Ichiro; Ennyu, Katsusuke; and Aoki, Osamu, 4,543,253, Cl. 514-21.000.
Enso-Gutzeit Oy: *See—*
Puumalainen, Pertti; Rantanen, Rauno; and Sikanen, Pertti, 4,543,487, Cl. 250-493.100.
Environmental Design, Inc.: *See—*
Wagner, Louis E.; Flannery, Harold F.; and Rakoczynski, Randolph W., 4,543,013, Cl. 405-128.000.
Erco Leuchten GmbH, Firma: *See—*
Schwarzfischer, Peter; Schmitz, Jochen; and Scheller, Peter, 4,543,009, Cl. 403-201.000.
Ergas, Raymond A.; and Muir, Francis, to Chevron Research Company. Robust estimation method for determining when subsequent data processing can include sign-bit representations of full-waveform seismic traces. 4,543,632, Cl. 364-421.000.
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, to Hoechst Aktiengesellschaft. Process for making carboxylic acid halides. 4,543,217, Cl. 260-544.00A.
Escher Wyss Limited: *See—*
Hildebrand, Otto, 4,543,162, Cl. 162-343.000.
Eskelinen, Pekka: *See—*
Kerttula, Reima; and Eskelinen, Pekka, 4,543,160, Cl. 162-193.000.
Esser, William L., III. Jewelry and the like adapted to define a plurality of objects or shapes. 4,542,631, Cl. 63-31.000.
Etablissement Dentaire Ivoclar: *See—*
Frick, Hansjorg, 4,542,823, Cl. 206-220.000.
Etablissement Public de Diffusion dit "TELEDIFFUSION DE FRANCE" : *See—*
Vigarie , Jean-Pierre, 4,543,645, Cl. 364-900.000.
Ethyl Corporation: *See—*
Raley, Garland E.; and Spear, Dean M., 4,543,299, Cl. 428-596.000.
Etsion, Izhak, to Technion Research & Development Foundation Limited. Rotary high-pressure, low-capacity pump. 4,543,037, Cl. 415-90.000.
Ettare, Ross C., to Primary Diagnostic Systems, Inc. Non-invasive method for diagnosing incipient or developed cancer tissue. 4,542,750, Cl. 128-760.000.
Evensen, Knut, to Elkem a/s. Electrode holder system for electrothermic smelting furnaces. 4,543,656, Cl. 373-101.000.
Everbloom Mushrooms: *See—*
Tan, Kok K., 4,542,608, Cl. 47-1.100.
Everhardus, Roelof H.; and van Lomm, Gerard J. E. H., to Oce-Nederland B.V. Electrophotographic element and photocopying process making use of certain 4-[bis-phenylamino]benzaldehyde azines. 4,543,310, Cl. 430-59.000.
Exxon Research and Engineering Co.: *See—*
Agarwal, Pawan K.; Duvdevani, Ilan; and Lundberg, Robert D., 4,543,385, Cl. 524-518.000.
Drake, Evelyn N.; and Calcavecchio, Peter, 4,542,791, Cl. 166-291.000.
Godwin, Allen D.; and Wickson, Edward J., 4,543,420, Cl. 560-76.000.
Wristers, Harry J., 4,543,400, Cl. 526-119.000.
Eyler, Roger C. Method and means for the detection of chemical agent droplets. 4,542,641, Cl. 73-26.000.

Fa. ED. Schwarachter GmbH & Co. KG: *See*—
Brockhaus, Ernst, 4,542,558, Cl. 16-263.000.
Fabienne, Jacquet: *See*—
Fleche, Guy; Gaset, Antoine; and Fabienne, Jacqoet, 4,543,168, Cl. 204-78.000.
Facit Aktiebolag: *See*—
Andersson, Leif H., 4,543,003, Cl. 400-632.000.
FAG Kugelfischer Georg Schafer Kommanditgesellschaft auf aktien: *See*—
Dittner, Adam; and Hartmann, Georg, 4,543,505, Cl. 310-102.00R.
Fairchild Camera and Instrument Corporation: *See*—
Vora, Madhukar B., 4,543,595, Cl. 357-71.000.
Fairchild Weston Systems, Inc.: *See*—
Hart, David G., 4,542,864, Cl. 242-193.000.
Falardeau, Edward R., to Dow Chemical Company, The. Organotin-fumed silica derivatives for use as biocidal compositions. 4,543,127, Cl. 106-18.290.
Falgoux, Daniel; Simoulin, Danielle; and Pascal-Mousselard, Michel, to BP Chimie Societe Anonyme. Process for the preparation of addition products of epoxides and hydroxylated compounds. 4,543,430, Cl. 568-678.000.
Falk, Jerry: *See*—
Carey, Richard A.; and Falk, Jerry, 4,543,629, Cl. 364-200.000.
Fantou, Jean-Paul, to ARO. Transformer, more especially a voltage dropping transformer for an electric welding machine. 4,543,552, Cl. 336-60.000.
Fanuc Ltd.: *See*—
Kawada, Shigeki; Amemiya, Yoichi; and Sogabe, Masatoyo, 4,543,506, Cl. 310-156.000.
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, 4,543,625, Cl. 364-169.000.
Fanuc Ltd: *See*—
Inaba, Hajimu; and Sakakibara, Shinsuke, 4,543,639, Cl. 364-513.000.
Farmitalia Carlo Erba S.p.A.: *See*—
Faustini, Franco; Villa, Vittoria; Gandolfi, Carmelo; and Di Salle, Enrico, 4,543,353, Cl. 514-236.000.
Farrar, David, to Allied Colloids Limited. Synthesis of vinyl esters. 4,543,422, Cl. 560-217.000.
Farrar, David; and Flesher, Peter, to Allied Colloids Limited. Hydration of nitriles. 4,543,423, Cl. 564-128.000.
Farrell, Leslie J.: *See*—
Bodenstein, Johannes J.; and Farrell, Leslie J., 4,543,122, Cl. 75-0.50B.
Farris, Charles L.: *See*—
Gettleman, Lawrence; Farris, Charles L.; Rawls, H. Ralph; and LeBouef, Ralph J., Jr., 4,543,379, Cl. 523-120.000.
Fast, Patricia E.: *See*—
Stringfellow, Dale A.; and Fast, Patricia E., 4,543,248, Cl. 514-272.000.
Fatool, Francis N.; and Gordon, James L., to J. D. & C., Inc. Safety base. 4,542,901, Cl. 273-25.000.
Faustini, Franco; Villa, Vittoria; Gandolfi, Carmelo; and Di Salle, Enrico, to Farmitalia Carlo Erba S.p.A. Ester and amide derivatives of 13,14-didehydro prostaglandins. 4,543,353, Cl. 514-236.000.
Fay, Richard D., to Lenco, Inc. Complementary output amplifier with an input for offsetting voltages. 4,543,538, Cl. 330-260.000.
Fedeli, Jean-Marc: *See*—
Audoin, Marcel; Fedeli, Jean-Marc; and Poujois, Robert, 4,543,564, Cl. 340-365.00C.
Federmann, Manfred: *See*—
von Bittera, Miklos; Federmann, Manfred; von Gizycki, Ulrich; Schapel, Dietmar; Stendel, Wilhelm; Voege, Herbert; and Dorn, Hubert, 4,543,247, Cl. 424-14.000.
Fegley, M. Bruce, Jr.: *See*—
Barringer, Eric A.; Fegley, M. Bruce, Jr.; and Bowen, H. Kent, 4,543,341, Cl. 501-1.000.
Feldkamper, Richard; Maneke, Siegfried; and Philipp, Bernhard, to Windmoller & Holscher. Rotary applicator having suction rollers with suckers which can be switched off. 4,542,894, Cl. 271-11.000.
Feldmann, Michel: *See*—
Picquendar, Jean-Edgar; Henaff, Jeannine; and Feldmann, Michel, 4,543,547, Cl. 333-193.000.
Fellows Corporation: *See*—
Tlaker, Erich, 4,542,638, Cl. 73-1.00R.
Felter, Brian A.: *See*—
Pepper, John T., Sr.; and Felter, Brian A., 4,542,840, Cl. 224-150.000.
Fey, Rainer, to Fichtel & Sachs AG. Central locking system for motor vehicles. 4,543,514, Cl. 318-282.000.
Fichtel & Sachs AG: *See*—
Fey, Rainer, 4,543,514, Cl. 318-282.000.
Schierling, Bernhard, 4,542,813, Cl. 192-70.270.
Figgie International Inc.: *See*—
Ackley, Mark W.; and Szafranski, Brian D., 4,543,112, Cl. 55-316.000.
Finlay, Joseph B.; and Ojakaar, Leo, to Du Pont de Nemours, E. I., and Company. Fluoroelastomer having improved compression set resistance. 4,543,394, Cl. 525-276.000.
Fiolkoski, Richard D.: *See*—
Garvey, Daniel C.; and Fiolkoski, Richard D., 4,542,802, Cl. 180-306.000.
Firester, Arthur H.; and D'Aiello, Robert V., to RCA Corporation. Method for eliminating defects in a photodetector. 4,543,171, Cl. 204-129.300.
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Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre, 4,543,429, Cl. 568-446.000.
Schulte-elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,543,431, Cl. 568-826.000.
Fischer, Robert T.; and Wahlstrom, Merle D., to Miner Enterprises, Inc. Tamper-proof railroad hopper car door operating system. 4,542,701, Cl. 105-240.000.
Fischer, Rolf: *See*—
Schmieder, Klaus; Paust, Joachim; Fischer, Rolf; and Weitz, Hans-Martin, 4,543,417, Cl. 549-375.000.
Fischer, Wolfgang: *See*—
Huber, Guntram; Fischer, Wolfgang; and Klie, Wolfgang, 4,542,925, Cl. 293-120.000.
Fisher Controls International, Inc.: *See*—
Pederson, Richard H., 4,543,536, Cl. 330-85.000.
Flake, Clark J., to Armco. Method for making grease from reclaimed oil. 4,543,196, Cl. 252-35.000.
Flannery, Harold F.: *See*—
Wagner, Louis E.; Flannery, Harold F.; and Rakoczynski, Randolph W., 4,543,013, Cl. 405-128.000.
Flauiani, Edmond. Earthquake responsive device for automatically shutting off gas or water or electricity or the like. 4,542,760, Cl. 137-45.000.
Fleche, Guy; Gaset, Antoine; and Fabienne, Jacquet, to Roquette Freres. Process for the preparation of ketones corresponding to 1,4-3,6-dianhydrohexitols by anodic electrooxidation. 4,543,168, Cl. 204-78.000.
Flecknoe-Brown, Anthony E.: *See*—
Bogwitz, Wolfram E. R.; Flecknoe-Brown, Anthony E.; and Duchovni, Naum, 4,543,054, Cl. 425-335.000.
Flentge, Charles A.; and Herrin, Thomas R., to Abbott Laboratories. Phenobarbital enzyme inhibitors. 4,543,412, Cl. 544-229.000.
Flesher, Peter: *See*—
Farrar, David; and Flesher, Peter, 4,543,423, Cl. 564-128.000.
Fletcher, George P.: *See*—
Brittingham, Donald; Fletcher, George P.; and Henry, Harvey J., 4,542,764, Cl. 137-347.000.
Fling, Russell T.: *See*—
Willis, Donald H.; and Fling, Russell T., 4,543,599, Cl. 358-13.000.
Flodl, Helmut: *See*—
Rasch, Klaus-Dieter; and Flodl, Helmut, 4,543,444, Cl. 136-256.000.
Flood, Eugene J.: *See*—
Bondoc, Alfredo A.; Flood, Eugene J.; and Sieling, Frederick W., 4,543,158, Cl. 162-145.000.
Flor, Joseph R.; Havens, Richard F.; and Panayoti, Peter, to Midland-Ross Corporation. Locking assembly for fluorescent lamps. 4,542,947, Cl. 339-54.000.
Florex Co., Ltd.: *See*—
Kuboshima, Yasuyuki, 4,543,005, Cl. 401-260.000.
Floryan, Daniel E.: *See*—
Smearing, Robert W.; and Floryan, Daniel E., 4,543,368, Cl. 521-90.000.
Fluorocarbon Company, The: *See*—
Bainard, Dean R., 4,542,573, Cl. 29-417.000.
FMC Corporation: *See*—
Witt, Henry J., 4,543,250, Cl. 424-70.000.
Foerster, George S., to N L Industries, Inc. Oxidation resistant magnesium alloy. 4,543,234, Cl. 420-409.000.
Fog, Arne D.: *See*—
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,543,333, Cl. 435-188.000.
Foggles, Inc.: *See*—
Gilson, Richard D.; and Young, Edgar D., 4,542,964, Cl. 351-44.000.
Foote Mineral Company: *See*—
Boryta, Daniel A.; and Nabighian, Misac N., 4,543,525, Cl. 324-54.000.
Ford Motor Company: *See*—
Geoffrey, James E., 4,542,939, Cl. 297-481.000.
Ramus, Kevin J., 4,543,466, Cl. 219-203.000.
Forester, Roger J.; and White, Lloyd R., to Minnesota Mining and Manufacturing Company. Uniform minimum-permeability woven fabric, filter, and process therefor. 4,543,113, Cl. 55-378.000.
Fortsch, William A., to Thomas & Betts Corporation. Clamp for mounting cable on channel support. 4,542,871, Cl. 248-73.000.
Foss, Stephen D.; and Colantuoni, Giovanni, to General Electric Company. Vaporization-cooled transformer havig provisions for replenishment of molecular sieve material. 4,543,446, Cl. 174-11.00R.
Foster Wheeler Energy Corporation: *See*—
Bonner, Stanley V., 4,543,022, Cl. 409-298.000.
Fouquet, Jean-Claude. Hydraulic apparatus for driving one or more hydraulic equipment devices, mounted on a semi-trailer, by means of the system motorizing the semi-trailer. 4,542,990, Cl. 366-61.000.
Fournier, Jacques: *See*—
Burckhardt, Christophe W.; Fournier, Jacques; and Stauber, Philippe, 4,543,526, Cl. 324-61.00R.
Fowler, Aubrey A., Jr. Crane/hoist forklift-type lifting apparatus. 4,542,928, Cl. 294-81.100.
Frackelton, A. Raymond, Jr.; Eisen, Herman N.; and Ross, Alonzo H., to Massachusetts Institute of Technology. Production and use of monoclonal antibodies to phosphotyrosine-containing proteins. 4,543,439, Cl. 935-92.000.
Frazier, Terry L.: *See*—
Mims, Donald S.; and Frazier, Terry L., 4,542,993, Cl. 374-42.000.

Freedman, Melvin S.; and Hartman, Paul H., to Avery International Corporation. Releasable closure for bags and containers. 4,543,139, Cl. 156-152.000.
Freilich, Alfred: *See*—
Bose, Debasis; and Freilich, Alfred, 4,543,135, Cl. 148-403.000.
French, Donald M., to United States of America, Navy. Digital transmitter simulator. 4,543,066, Cl. 434-242.000.
French, Pierre B.; and Langdon, Paul J., to Holset Engineering Company Limited. Impellor for centrifugal compressor. 4,543,041, Cl. 416-183.000.
Frick, Hansjorg, to Etablissement Dentaire Ivoclar. Mixing container. 4,542,823, Cl. 206-220.000.
Fritsch, Gunter: *See*—
Treber, Willi O.; and Fritsch, Gunter, 4,542,926, Cl. 293-128.000.
Frohler, Hanns; and Rossberger, Erwin, to Dipl.-Ing. Hanns Frohler. Process and a device for the production of chlorine dioxide. 4,543,243, Cl. 423-478.000.
Froning, Edward C.; and Graham, Gregory S., to Froning, Edward C. X-ray marker device. 4,543,091, Cl. 604-116.000.
Frontier Antiques, Inc.: *See*—
Perez-Tubens, Drucilla M.; and Stewart, Thomas R., 4,542,838, Cl. 223-87.000.
Fuji Photo Film Co., Ltd.: *See*—
Akashi, Goro; Nahara, Akira; and Arai, Yoshihiro, 4,543,275, Cl. 427-250.000.
Ishikawa, Takatoshi; and Nakajima, Junya, 4,543,322, Cl. 430-380.000.
Kamiyama, Kouzi, 4,543,198, Cl. 252-62.590.
Kato, Hisatoyo, 4,543,479, Cl. 250-327.200.
Kato, Hisatoyo, 4,543,480, Cl. 250-327.200.
Kiritani, Masataka; Asao, Yasuzi; and Takayanagi, Takashi, 4,543,269, Cl. 427-44.000.
Maeda, Minoru; Iwasaki, Masayuki; and Shinozaki, Fumiaki, 4,543,318, Cl. 430-288.000.
Shiota, Kazuo; Suzuki, Kenji; and Fukui, Takashi, 4,542,984, Cl. 355-68.000.
Fuji Photo Optical Co., Ltd.: *See*—
Numata, Saburo, 4,542,971, Cl. 354-403.000.
Fuji Xerox Co., Ltd.: *See*—
Kurata, Masami; and Inui, Toshiharu, 4,543,587, Cl. 346-76.0PH.
Fujii, Tetsuya: *See*—
Sudo, Fumio; Fujii, Tetsuya; Kato, Yoshiei; Yamada, Sumio; and Emoto, Kanji, 4,543,125, Cl. 75-51.500.
Fujiki, Norio: *See*—
Tachibana, Akira; Fujiki, Norio; Endo, Hiroshi; Yamaki, Kiyoshi; and Kishi, Norimasa, 4,543,577, Cl. 340-904.000.
Fujimoto, Hiroaki, to Sanshin Kogyo Kabushiki Kaisha. Starting fuel increasing system for internal combustion engines. 4,542,723, Cl. 123-187.50R.
Fujimoto, Masaya: *See*—
Harada, Takashi; Kobayashi, Akio; Honda, Masakazu; Harada, Susumu; Fujimoto, Masaya; and Suzuki, Masatoshi, 4,543,176, Cl. 204-406.000.
Fujimoto, Minoru: *See*—
Komatsu, Nobuhiro; Fujimoto, Minoru; Hirata, Kazuyuki; and Yamane, Makoto, 4,542,934, Cl. 296-194.000.
Fujimoto, Shigeo. Double cylinder press for formation of fibrous layers. 4,543,161, Cl. 162-323.000.
Fujimoto, Yuji; Aono, Masayuki; Nakano, Tetuo; and Nakabayashi, Teiji, to Daikin Industries, Ltd. Refrigeration equipment. 4,542,783, Cl. 165-30.000.
Fujimura, Toshio: *See*—
Nagasawa, Shiro; Morimoto, Naruaki; Fujimura, Toshio; Itoh, Masayuki; and Taniguchi, Shinya, 4,542,730, Cl. 123-489.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Ueda, Ikuo; Kato, Masayuki; and Nagano, Masanobu, 4,543,356, Cl. 514-259.000.
Fujita, Katsuji, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor protective device. 4,543,593, Cl. 357-48.000.
Fujita, Yuji; Wakasugi, Keizo; and Kaneko, Ryoichi, to Kohjin Co., Ltd. Heat resistant ovenable paperboard. 4,543,280, Cl. 428-35.000.
Fujitsu Limited: *See*—
Matsunaga, Shigeo; Iizuka, Yoshio; and Suzuki, Tadaaki, 4,543,612, Cl. 358-261.000.
Mukai, Ryoichi, 4,543,133, Cl. 148-1.500.
Wakimoto, Yasuhiro, 4,543,494, Cl. 307-200.00B.
Yoshida, Masanobu, 4,543,647, Cl. 365-201.000.
Fujiwara, Yoshiyuki: *See*—
Hayashi, Yuzo; Yamanashi, Fumiaki; and Fujiwara, Yoshiyuki, 4,543,201, Cl. 252-299.100.
Fukasawa, Tetsuo: *See*—
Funabashi, Kiyomi; Kawamura, Fumio; Takagi, Toshio; Urata, Megumu; and Fukasawa, Tetsuo, 4,543,085, Cl. 494-30.000.
Fukuda, Kunio: *See*—
Kuribayashi, Isao; and Fukuda, Kunio, 4,543,391, Cl. 525-68.000.
Fukui, Hiroshi, to Canon Kabushiki Kaisha. Dot printer. 4,543,588, Cl. 346-76.0PH.
Fukui, Takashi: *See*—
Shiota, Kazuo; Suzuki, Kenji; and Fukui, Takashi, 4,542,984, Cl. 355-68.000.
Fukushi, Toshio: *See*—
Hirooka, Hiroshi; Yoshida, Yoshio; Fukushi, Toshio; and Takeya, Yasuo, 4,542,633, Cl. 68-12.00R.
Fukushima, Isao: *See*—
Kobori, Yasunori; Okamoto, Kaneyuki; Fukushima, Isao; Sekiya, Masataka; Nishijima, Hideo; Kano, Kenji; and Sakae, Tetsuo, 4,543,516, Cl. 318-318.000.
Fukuta, Masaharu; Oshima, Yoshio; Ishikawa, Sako; and Ohtsuki, Toru, to Hitachi, Ltd. Multiplication device using multiple-input adder. 4,543,641, Cl. 364-756.000.
Funabashi, Kiyomi; Kawamura, Fumio; Takagi, Toshio; Urata, Megumu; and Fukasawa, Tetsuo, to Hitachi, Ltd. Apparatus for separating solid matters. 4,543,085, Cl. 494-30.000.
Furihata, Makoto: *See*—
Kaneko, Kenji; Nagata, Minoru; Furihata, Makoto; Ogura, Setsuo; Okabe, Takahiro; and Sato, Mitsuya, 4,543,499, Cl. 307-477.000.
Fuse, Genzo, to Honda Giken Kogyo Kabushiki Kaisha. Robot-type welding apparatus. 4,542,845, Cl. 228-45.000.
Fuse, Masashi: *See*—
Tomoyori, Makoto; and Fuse, Masashi, 4,543,578, Cl. 340-995.000.
Futami, Shunichi: *See*—
Watanabe, Kazuhiro; Yoshikawa, Sakae; and Futami, Shunichi, 4,543,372, Cl. 523-109.000.
Futamura, Shoji: *See*—
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,543,050, Cl. 425-28.00D.
Fuyama, Moriaki; Tamura, Katsumi; Morijiri, Makoto; Sawahata, Mamoru; and Hachino, Hiroaki, to Hitachi, Ltd. Display panel. 4,543,573, Cl. 340-781.000.
G-C Dental Industrial Corp.: *See*—
Watanabe, Kazuhiro; Yoshikawa, Sakae; and Futami, Shunichi, 4,543,372, Cl. 523-109.000.
GA Technologies Inc.: *See*—
Ohkawa, Tihiro, 4,543,231, Cl. 376-133.000.
GAF Corporation: *See*—
Bondoc, Alfredo A.; Flood, Eugene J.; and Sieling, Frederick W., 4,543,158, Cl. 162-145.000.
Liu, Kou-Chang, 4,543,426, Cl. 564-442.000.
Gafken, David M. Chiropractor's examination stool. 4,542,936, Cl. 297-257.000.
Gahn, Randall F.; and Hagedorn, Norman H., to United States of America, National Aeronautics and Space Administration. Negative electrode catalyst for the iron chromium REDOX energy storage system. 4,543,302, Cl. 429-15.000.
Gallop, Paul M.; and Korb, Donald R., to Syntex (U.S.A.) Inc. Polymeric compositions and hydrogels formed therefrom. 4,543,371, Cl. 523-106.000.
Gam Rad, Inc.: *See*—
Subsara, William P.; and Levonius, Michael R., 4,543,175, Cl. 204-400.000.
Gamberini, Ernesto, to MG2 S.p.A. Method for filling containers with metered quantities of powdered materials. 4,542,835, Cl. 222-1.000.
Gandolfi, Carmelo: *See*—
Faustini, Franco; Villa, Vittoria; Gandolfi, Carmelo; and Di Salle, Enrico, 4,543,353, Cl. 514-236.000.
Gandy, James, to Signtech Inc. Sign. 4,542,605, Cl. 40-574.000.
Gardner, Edward A.: *See*—
Bean, Robert; Gardner, Edward A.; Chow, Michael; Rubinson, Barry L.; Lary, Richard F.; and Blackledge, Robert, 4,543,626, Cl. 364-200.000.
Gardner, John F.; and Morton, Gerald H., to Xomox Corporation. Butterfly valve assembly and method of making same. 4,542,763, Cl. 137-340.000.
Garnier, Francis: *See*—
Dubois, Jean C.; Tourillon, Gerard; and Garnier, Francis, 4,543,306, Cl. 429-194.000.
Garrett Corporation, The: *See*—
Kitaguchi, Sam S., 4,543,038, Cl. 415-112.000.
Palmer, Donald L., 4,543,036, Cl. 415-1.000.
Garrett, William R., to Hughes Tool Company. Roller reamer. 4,542,797, Cl. 175-228.000.
Garvey, Daniel C.; and Fiolkoski, Richard D., to Woodward Governor Company. Engine and transmission control system for combines and the like. 4,542,802, Cl. 180-306.000.
Gaschutz, Heinz. Apparatus for selectively introducing one or more of a plurality of different weft threads into an air jet weaving machine. 4,542,772, Cl. 139-435.000.
Gaset, Antoine: *See*—
Fleche, Guy; Gaset, Antoine; and Fabienne, Jacquet, 4,543,168, Cl. 204-78.000.
Gasway Corporation: *See*—
Hecht, Richard M.; and Seaverns, Robert G., 4,542,860, Cl. 242-72.00R.
Gautschi, Fritz: *See*—
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre, 4,543,429, Cl. 568-446.000.
Gawer, Klaus-Peter; and Suhr, Olaf, to Westfalia Separator Ag. Oil-flow regulator for vacuum pumps in milking systems. 4,542,766, Cl. 137-559.000.
Gaylord, Norman G., to Plastic Specialties and Technologies, Inc. Peroxygen compound-isoascorbic acid redox catalyst system for suspension polymerization of vinyl chloride. 4,543,401, Cl. 526-204.000.
Gebr. Happich GmbH: *See*—
Treber, Willi O.; and Fritsch, Gunter, 4,542,926, Cl. 293-128.000.
Gehrmann, Klaus: *See*—
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, 4,543,217, Cl. 260-544.00A.

General Electric Company: *See*—
Barber, William D.; Eberhard, Jeffrey W.; and Karr, Steven G., 4,542,657, Cl. 73-861.250.
Foss, Stephen D.; and Colantuoni, Giovanni, 4,543,446, Cl. 174-11.00R.
Giles, Harold F., Jr.; and Baccaro, Lorene E., 4,543,291, Cl. 428-412.000.
Giles, Harold F., Jr.; and Baccaro, Lorene E., 4,543,292, Cl. 428-412.000.
Kaminski, Christopher A.; and Williams, Edward K., 4,543,503, Cl. 310-59.000.
Leer, Stuart D., 4,543,584, Cl. 343-881.000.
Peters, Edward N., 4,543,416, Cl. 549-241.000.
Smearing, Robert W.; and Floryan, Daniel E., 4,543,368, Cl. 521-90.000.

Genicom Corporation: *See*—
Bittner, John R.; Billing, Ralph S.; and Stewart, Robert T., Jr., 4,543,002, Cl. 400-212.000.

Gennari, Federico, to Bioresearch S.p.A. Stable S-adenosylmethionine salts, the process for their preparation, and therapeutic compositions which contain them as active principle. 4,543,408, Cl. 536-26.000.

Genrich, Volker. Radiation measuring instrument. 4,543,483, Cl. 250-374.000.

Geoffrey, James E., to Ford Motor Company. Seat belt positioning device. 4,542,939, Cl. 297-481.000.

George Washington University: *See*—
Goldstein, Allan L.; Low, Teresa L. K.; McClure, John; and Naylor, Paul H., 4,543,340, Cl. 436-542.000.

Geppert, Rudolf: *See*—
Kuhn, Michael H.; Piotrowski, Herbert; and Geppert, Rudolf, 4,543,537, Cl. 330-129.000.

Gerard A. Wurdack & Associates, Inc.: *See*—
Wurdack, Gerard A., 4,543,583, Cl. 343-792.000.

Gerber Garment Technology, Inc.: *See*—
Pearl, David R., 4,542,672, Cl. 83-409.000.
Pearl, David R., 4,542,673, Cl. 83-422.000.

Gerfen, Richard: *See*—
Bianchi, John E.; Nichols, Richard D. E.; and Gerfen, Richard, 4,542,841, Cl. 224-193.000.

Gersbach, Klaus: *See*—
Bisping, Bernhard; Wallow, Peter; Gersbach, Klaus; and Romer, Rudolf, 4,542,696, Cl. 102-430.000.

Gerstenberger, Roland W. Method and apparatus for rolling mats. 4,542,859, Cl. 242-67.200.

Gervasio, Gregorio C., to Colgate-Palmolive Company. Sodium higher fatty alkyl sulfate detergent laundry bars and process for manufacture thereof. 4,543,204, Cl. 252-531.000.

Gesthuysen, Hans-Dieter: *See*—
Buck, Robert; Marhofer, Gerd; and Gesthuysen, Hans-Dieter, 4,543,566, Cl. 340-512.000.

Gettleman, Lawrence; Farris, Charles L.; Rawls, H. Ralph; and LeBouef, Ralph J., Jr., to Gulf South Research Institute. Soft and firm denture liner for a composite denture and method for fabricating. 4,543,379, Cl. 523-120.000.

Gibson, James. Portable non-powered dishwasher. 4,542,756, Cl. 134-177.000.

Gibson, Keith: *See*—
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,543,333, Cl. 435-188.000.

Giersch, Wolfgang K.: *See*—
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre, 4,543,429, Cl. 568-446.000.

Giesmann, Kendall L., to Deere & Company. Pick-up type drawbar assembly. 4,542,913, Cl. 280-479.00A.

Gilbert, Chevalier. Central heating method and plant. 4,542,850, Cl. 236-20.00R.

Giles, Brian, to GOM International Ltd. Method and apparatus for coating plastics bottles. 4,543,277, Cl. 427-430.100.

Giles, Harold F., Jr.; and Baccaro, Lorene E., to General Electric Company. Multilayer structure. 4,543,291, Cl. 428-412.000.

Giles, Harold F., Jr.; and Baccaro, Lorene E., to General Electric Company. Multilayer structure. 4,543,292, Cl. 428-412.000.

Gillett, John B.; and Miraglia, John A., to International Business Machines Corporation. Zero insertion force edge connector with wipe cycle. 4,542,950, Cl. 339-75.0MP.

Gilman, Sol: *See*—
Binder, Michael; Walker, Charles W., Jr.; Petersen, Eric R.; Wade, William L., Jr.; and Gilman, Sol, 4,543,305, Cl. 429-101.000.

Gilson, Richard D.; and Young, Edgar D., to Foggles, Inc. Eyewear with translucent superior field of view. 4,542,964, Cl. 351-44.000.

Glantschnig, Josef; Gugl, Peter; Puntschart, Ernst; and Zimmer, Johannes P. M., to Zimmer, Johannes. Releasably coupled upper and lower carriage apparatus for the treatment of webs. 4,542,692, Cl. 101-123.000.

Glasgow, Clarence; and Alberty, Randall W., to Custom Engineering and Manufacturing Corp. Pneumatic liquid level control having either throttling of snap action. 4,542,765, Cl. 137-390.000.

Glasscock, Jessie F., Jr.: *See*—
Smith, Daniel J.; Glasscock, Jessie F., Jr.; Poska, Richard P.; and Kuder, Carl L., 4,542,646, Cl. 73-78.000.

Glaverbel: *See*—
Robyn, Pierre; and Deschepper, Pierre, 4,542,888, Cl. 266-44.000.

Glover, Melvin L.: *See*—
Hamlin, David A.; and Glover, Melvin L., 4,542,805, Cl. 182-91.000.

Godfrey, Dwaine A.: *See*—
Charbonneau, Arthur G.; Godfrey, Dwaine A.; McNennamy, John A.; and Nafziger, Steven, 4,542,649, Cl. 73-168.000.

Godwin, Allen D.; and Wickson, Edward J., to Exxon Research & Engineering Co. Pyromellitate plasticizers and vinyl chloride. 4,543,420, Cl. 560-76.000.

Goldberger, William M., to Superior Graphite Co. Method for the continuous production of carbides. 4,543,240, Cl. 423-346.000.

Goldhahn, Stephen L., to Campbell Soup Company. Heating and cooling foods at high pressure in a continuous sterilization system. 4,543,263, Cl. 426-520.000.

Goldner, Erwin P. Poly-pipe fusion machine. 4,542,892, Cl. 269-41.000.

Goldstein, Allan L.; Low, Teresa L. K.; McClure, John; and Naylor, Paul H., to George Washington University. Radioimmunoassay of thymosin β_4. 4,543,340, Cl. 436-542.000.

Goldstein, Theodore P., to Mobil Oil Corporation. Dual intensity magnetic separation process for beneficiation of platinum ore. 4,543,178, Cl. 209-2.000.

GOM International Ltd.: *See*—
Giles, Brian, 4,543,277, Cl. 427-430.100.

Good, Ivan C.: *See*—
Jao, Yun C.; and Good, Ivan C., 4,543,332, Cl. 435-180.000.

Goodall, Brian L.: *See*—
Burstain, Israel G.; and Goodall, Brian L., 4,543,389, Cl. 525-53.000.

Goodyear Aerospace Corporation: *See*—
Crossman, Richard L., 4,542,809, Cl. 188-72.800.

Gordon, James L.: *See*—
Fatool, Francis N.; and Gordon, James L., 4,542,901, Cl. 273-25.000.

Gorecki, James L., to Honeywell Inc. Process insensitive CMOS window detector. 4,543,498, Cl. 307-360.000.

Goto, Hiroaki: *See*—
Tooka, Takuzo; Nozaki, Choji; Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Yamaoka, Yoshiaki; Goto, Hiroaki; and Miura, Yasuhiro, 4,542,560, Cl. 19-98.000.

Gotou, Hitoshi: *See*—
Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, 4,543,504, Cl. 310-68.00D.

Gotto, Raymond J. Hygiene implement. 4,542,828, Cl. 206-581.000.

Gould Inc.: *See*—
Oprysko, Modest M.; and Beranek, Mark W., 4,543,270, Cl. 427-53.100.

Gould, Ronald M.; and Tabak, Samuel A., to Mobil Oil Corporation. Multistage process for converting oxygenates to liquid hydrocarbons with ethene recycle. 4,543,435, Cl. 585-330.000.

Graf, Knut: *See*—
Doebler, Klaus P.; Graf, Knut; Jager, Kurt E.; Johannsen, Friedrich; Ritz, Jurgen; and Saatweber, Dietrich, 4,543,375, Cl. 523-348.000.

Graham, Gregory S.: *See*—
Froning, Edward C.; and Graham, Gregory S., 4,543,091, Cl. 604-116.000.

Graindorge, Philippe; and Arditty, Herve , to Thomson-CSF. Device for illuminating an electro-optical medium for recording holograms in real time. 4,542,955, Cl. 350-3.630.

Gramse, Jack A.; and Pierce, Jon C., to Solvent Extractors Inc. Parts washing and/or fluid recovery apparatus. 4,543,182, Cl. 210-95.000.

Grangette, Henri; Constans, Bernard; and Maldonado, Paul, to Elf France. Friction-reducing lubricating compositions each comprising an additive. 4,543,195, Cl. 252-33.400.

Greene, Walter; and Liebke, William R., to United Technologies Corporation. Variable area inlet guide vanes. 4,542,622, Cl. 60-39.230.

Greenhalgh, Stephen P.: *See*—
Taylor, Richard J.; Kellar, Paul R. N.; and Greenhalgh, Stephen P., 4,543,607, Cl. 358-140.000.

Greenhouse, Robert: *See*—
Muchowski, Joseph M.; Greenhouse, Robert; Ackrell, Jack; Li, Tsung-Tee; and Pfister, Jurg R., 4,543,361, Cl. 514-422.000.

Greenquist, Alfred C.: *See*—
Sommer, Ronald G.; and Greenquist, Alfred C., 4,543,335, Cl. 436-69.000.

Greenwood, Brian F., to Kamyr, Inc. Medium consistency flat disk pressure screen. 4,543,181, Cl. 209-273.000.

Greiner, Waldemar H.: *See*—
La Crosse, Frank X.; and Greiner, Waldemar H., 4,542,923, Cl. 285-424.000.

Grossauer, Alfred, to Agro Ag. Fitting for connecting circumferentially ribbed insulating tubes of plastic. 4,542,922, Cl. 285-320.000.

Grosse, Burkhard, to Siemens Aktiengesellschaft. Diagnostic radiology system for angiographic X-ray examinations. 4,543,604, Cl. 358-111.000.

Grover, Jeffrey M.; and Williams, Luanne S., to United States of America, Energy. Mechanically attached load pad for liquid metal nuclear reactor fuel assemblies. 4,543,233, Cl. 376-446.000.

Groves, Kenneth O.: *See*—
Nankee, Robert J.; Vivian, Thomas A.; and Groves, Kenneth O., 4,543,364, Cl. 521-40.000.

Grun, Gustav; and Borgner, Klaus, to Luco-Technic GmbH Verfahrenstechnische Anlagen. Device for cutting flexible containers containing fungible material. 4,543,029, Cl. 414-412.000.

Grushkin, Harold. Combination manually and inertia propelled skimotion exercise machine. 4,542,898, Cl. 272-97.000.

GTE Laboratories Incorporated: *See*—
Middleton, Thomas R., 4,542,843, Cl. 228-112.000.

GTE Valeron Corporation: *See—*
Cusack, Robert F., 4,542,590, Cl. 33-169.00R.
Guess, Joe F.: *See—*
Oakley, Clyde G.; Guess, Joe F.; Robbins, Cheston W.; Kelly, Robert M.; Skaar, Dean N.; and Walker, Stephen D., 4,542,745, Cl. 252-312.000.
Gugl, Peter: *See—*
Glantschnig, Josef; Gugl, Peter; Puntschart, Ernst; and Zimmer, Johannes P. M., 4,542,692, Cl. 101-123.000.
Guillou, Louis C.; Le Bris, Raymond; and Le Rest, Ambroise. Generator of encoding or decoding 8-bit bytes which can be used in a video system. 4,543,559, Cl. 340-347.0DD.
Guilloux, Bernard, to CEM-Compagnie Electro-Mecanique et Compagnie. Static traction/braking switch-over circuit for a variable speed system including an asynchronous motor powered by current switching. 4,543,518, Cl. 318-757.000.
Gulf South Research Institute: *See—*
Gettleman, Lawrence; Farris, Charles L.; Rawls, H. Ralph; and LeBouef, Ralph J., Jr., 4,543,379, Cl. 523-120.000.
Gulich, Gerhard: *See—*
Bressert, Edgar; Gulich, Gerhard; Martini, Helmut; Meny, Rudi; Sauer, Roland; and Wohr, Rolf, 4,543,570, Cl. 340-589.000.
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Tarumi, Noriyoshi; Kimura, Kiyoshi; and Gunji, Kouichi, 4,542,978, Cl. 355-3.0TR.
Gupta, Nand K., to Tokyo Shibaura Denki Kabushiki Kaisha. High density detector array with replaceable sections. 4,543,490, Cl. 250-578.000.
H. B. Fuller Company: *See—*
Bunnelle, William L.; and Lindmark, Richard C., Jr., 4,543,099, Cl. 604-385.00A.
H. B. Zachry Co.: *See—*
Marten, Edward N., 4,542,940, Cl. 299-1.000.
Hsas, David J., to Temp Badge Security Systems, Inc. Light sensitive validating identification badge system. 4,542,982, Cl. 355-40.000.
Hachino, Hiroaki: *See—*
Fuyama, Moriaki; Tamura, Katsumi; Morijiri, Makoto; Sawahata, Mamoru; and Hachino, Hiroaki, 4,543,573, Cl. 340-781.000.
Hackney, John. Combined washer and cotter pin anti-snag device. 4,543,024, Cl. 411-364.000.
Haddock, Richard: *See—*
Drexler, Jerome; and Haddock, Richard, 4,543,307, Cl. 430-12.000.
Hagedorn, Norman H.: *See—*
Gahn, Randall F.; and Hagedorn, Norman H., 4,543,302, Cl. 429-15.000.
Hager, Walter: *See—*
Balzer, Dieter; and Hager, Walter, 4,542,707, Cl. 112-310.000.
Hagiwara, Koichi: *See—*
Sugano, Shunji; Hagiwara, Koichi; Miura, Isao; and Honto, Akira, 4,543,404, Cl. 528-26.000.
Hahn, Henry: *See—*
Rowe, Russell H., Jr.; Lare, Paul J.; and Hahn, Henry, 4,542,539, Cl. 623-16.000.
Hall, George R.: *See—*
Hall, Robert J., Jr.; Hall, George R.; and Cookerly, Jack C., 4,542,675, Cl. 84-1.030.
Hall, Robert J., Jr.; Hall, George R.; and Cookerly, Jack C. Automatic tempo set. 4,542,675, Cl. 84-1.030.
Halliburton Company: *See—*
Nunley, Allen; and Kampfer, John G., 4,543,478, Cl. 250-261.000.
Hallmark Cards, Inc.: *See—*
Carlson, Ronald L.; and Seale, Edward G., 4,542,676, Cl. 84-94.00C.
Halonen, Heino; Hetemaa, Kalevi; and Vainio, Frans, to Elevator GmbH. Pick-up means for roller pallets. 4,543,026, Cl. 414-352.000.
Hamlin, David A.; and Glover, Melvin L. Automatically retractable, rotatable step assembly. 4,542,805, Cl. 182-91.000.
Hamlin, Humphrey A. S.; and Taylor, James C., to Normalair-Garrett (Holdings) Limited. Molecular sieve type gas separation systems. 4,543,109, Cl. 55-25.000.
Hammer, Klaus-Dieter; Winter, Hermann; Kindl, Erwin; and Luchterhand, Heinz, to Hoechst Aktiengesellschaft. Tubular food casing having improved peeling properties. 4,543,282, Cl. 428-36.000.
Hancock, John C., to Robert Morton DG Limited. Lauter tuns. 4,542,682, Cl. 99-277.100.
Handa, Takashi; and Okayama, Yoshiaki, to Nohmi Bosai Kogyo Co., Ltd. Carbon monoxide sensing element and method of making same. 4,543,273, Cl. 427-126.300.
Hanna, Marie R.: *See—*
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,543,192, Cl. 252-8.600.
Hansen, Debra K.: *See—*
Bradley, John J.; and Hansen, Debra K., 4,543,141, Cl. 156-164.000.
Hansen, John M. Kit for making an animal maze. 4,542,713, Cl. 119-1.000.
Hansen, Siegfried, to Hughes Aircraft Company. Data Exchange Subsystem for use in a modular array processor. 4,543,642, Cl. 364-900.000.
Hanyu, Susumu; Hara, Kazumasa; and Koike, Mikio, to Janome Sewing Machine Industry Co., Ltd. Lower thread tension adjusting device of sewing machine. 4,542,706, Cl. 112-229.000.
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Hanyu, Susumu; Hara, Kazumasa; and Koike, Mikio, 4,542,706, Cl. 112-229.000.
Hara, Masato: *See—*
Doi, Yuzuru; Hara, Masato; and Yoshihama, Hideo, 4,543,477, Cl. 250-227.000.
Hara, Takeshi: *See—*
Kato, Yoshinori; Umemoto, Naoji; Hara, Takeshi; Tsukada, Yutaka; and Hirai, Hidematsu, 4,543,211, Cl. 260-112.00B.
Hara, Tomihiro; Adaniya, Takeshi; Sagiyama, Masaru; Watanabe, Tsutomu; Shimoma, Takashi; and Nabatame, Masaru, to Nippon Kokan Kabushiki Kaisha. Iron-zinc alloy electro-galvanized steel sheet having a plurality of iron-zinc alloy coatings. 4,543,300, Cl. 428-610.000.
Harada, Mineo: *See—*
Tanaka, Hideyo; and Harada, Mineo, 4,543,001, Cl. 400-212.000.
Harada, Nozomu; Endo, Yukio; Yoshida, Okio; and Matsunaga, Yoshiyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid state image sensor. 4,543,489, Cl. 250-578.000.
Harada, Nozomu; and Yoshida, Okio, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid state image sensor with high resolution. 4,543,601, Cl. 358-213.000.
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Harada, Takashi; Kobayashi, Akio; Honda, Masakazu; Harada, Susumu; Fujimoto, Masaya; and Suzuki, Masatoshi, 4,543,176, Cl. 204-406.000.
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Harada, Tetsuya: *See—*
Hirabayashi, Shigeto; Masukawa, Toyoaki; Ishikawa, Wataru; and Harada, Tetsuya, 4,543,309, Cl. 430-31.000.
Hardy, Richard: *See—*
Caldwell, Allan L.; Hardy, Richard; and Neumann, Frank D., 4,542,866, Cl. 244-45.00A.
Hariharan, Peruvamba R., to Magnavox Government and Industrial Electronics Company. Switched capacitor circuit with minimized switched capacitance. 4,543,546, Cl. 333-173.000.
Harmon, Zita T. K.; and Dechow, Frederick J., to Dow Chemical Company, The. Separating whey components into high purity products by ion exchange. 4,543,261, Cl. 426-271.000.
Harms, Heye: *See—*
Kleinschmidt, Lothar; Wallroth, Carl F.; and Harms, Heye, 4,542,740, Cl. 128-204.210.
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., to Allied Corporation. Composite containing coated extended chain polyolefin fibers. 4,543,286, Cl. 428-288.000.
Harris, Dwight E., to Rotron, Inc. Pressure relief valve. 4,542,768, Cl. 137-856.000.
Harris, Gary R.; and Oda, Ronald L., to Conoco Inc. Two section deep sump solids slurry recovery system. 4,543,018, Cl. 406-102.000.
Harris, Stephen J.: *See—*
Woods, John; Rooney, John M.; and Harris, Stephen J., 4,543,397, Cl. 525-455.000.
Hart, David G., to Fairchild Weston Systems, Inc. Brake device for coaxial reel tape recorders. 4,542,864, Cl. 242-193.000.
Hartel, Georg: *See—*
Peter, Siegfried; Hartel, Georg; and Bruckhoff, Wolfgang, 4,543,193, Cl. 252-8.55B.
Hartig, Juergen; Stoessel, Armin; Herrmann, Guenter; and Marosi, Laszlo, to BASF Aktiengesellschaft. Preparation of cyclohexanol and cyclohexanone. 4,543,427, Cl. 568-342.000.
Hartman, Paul H.: *See—*
Freedman, Melvin S.; and Hartman, Paul H., 4,543,139, Cl. 156-152.000.
Hartmann, Georg: *See—*
Dittner, Adam; and Hartmann, Georg, 4,543,505, Cl. 310-102.00R.
Harvey Hubbell Incorporated: *See—*
Quiogue, Honesto D., 4,543,007, Cl. 403-97.000.
Hasegawa, Junzo: *See—*
Tooka, Takuzo; Nozaki, Choji; Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Yamaoka, Yoshiaki; Goto, Hiroaki; and Miura, Yasuhiro, 4,542,560, Cl. 19-98.000.
Hasegawa, Masumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Rotary compressor. 4,543,046, Cl. 418-63.000.
Hasegawa, Masumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Rotary compressor. 4,543,047, Cl. 418-63.000.
Hasenbalg, Ralph D. Latching actuator. 4,543,000, Cl. 400-180.000.
Haskins, Delbert E.: *See—*
Murphy, Milford R.; and Haskins, Delbert E., 4,542,679, Cl. 91-363.00A.
Hata, Hideo: *See—*
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,542,886, Cl. 264-22.000.
Hattori, Katsuhide: *See—*
Edamura, Kohji; Torii, Akio; Hattori, Katsuhide; and Sakai, Hiroshi, 4,543,136, Cl. 149-21.000.
Hauser, Frank M.; and Mal, Dipakranjan, to Oregon Graduate Center for Study & Research. Production of a hexahydronaphthalenone compound. 4,543,428, Cl. 568-345.000.
Havens, Richard F.: *See—*
Flor, Joseph R.; Havens, Richard F.; and Panayoti, Peter, 4,542,947, Cl. 339-54.000.
Hawkins, Wallace H. Fifth wheel wrecker hoist. 4,543,030, Cl. 414-563.000.
Hayashi, Chikahisa: *See—*
Kai, Tooru; and Hayashi, Chikahisa, 4,543,602, Cl. 358-106.000.

Hayashi, Shozo: *See—*
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,543,207, Cl. 252-570.000.

Hayashi, Yuzo; Yamanashi, Fumiaki; and Fujiwara, Yoshiyuki, to Alps Electric Co., Ltd. Liquid crystal mixture. 4,543,201, Cl. 252-299.100.

Hayashida, Kenji, to Hosiden Electronics Co., Ltd. Small-sized switch. 4,543,459, Cl. 200-67.00D.

Head, Kenneth O.; and Bollinger, Arthur E., to Teknar, Inc. System for ultrasonically detecting the relative position of a moveable device. 4,543,649, Cl. 367-96.000.

Hecht, Richard M.; and Seaverns, Robert G., to Gasway Corporation. Hub lock for coil former support means. 4,542,860, Cl. 242-72.00R.

Heck, Klaus; and Lindner, Horst, to Audi AG. Method of producing accurately scaled, well-defined surfaces of work pieces from carbonaceous cast iron with tribologic properties. 4,543,170, Cl. 204-129.200.

Heggeland, Bruce: *See—*
Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,542,938, Cl. 297-445.000.

Heil, Ernst; Wenzel, Franz; Arndt, Peter J.; and Schellhaas, Walter, to Rohm GmbH. Impact resistant resins and method for making the same. 4,543,383, Cl. 524-458.000.

Heil-Quaker Corporation: *See—*
Trent, Bryan O.; and Tomlinson, Ronald S., 4,542,734, Cl. 126-110.00R.

Heinicke, Ralph M., to Research Corporation of the University of Hawaii. Xeronine, a new alkaloid, useful in medical, food and industrial fields. 4,543,212, Cl. 546-1.000.

Hellwege, Dieter; Steffen, Peter; and Waldhelm, Wolfgang, to U.S. Philips Corporation. Antenna for a submarine vessel. 4,543,582, Cl. 343-710.000.

Helm, William N.: *See—*
Bagnall, Ralph S.; and Helm, William N., 4,542,785, Cl. 165-95.000.

Henaff, Jeannine: *See—*
Picquendar, Jean-Edgar; Henaff, Jeannine; and Feldmann, Michel, 4,543,547, Cl. 333-193.000.

Hendricks, Byron J. Exercise device. 4,542,899, Cl. 272-118.000.

Hendrix, James E.: *See—*
Payet, George L.; Hendrix, James E.; and Lowery, Jack R., Sr., 4,542,771, Cl. 139-302.000.

Henery, James D.; McHaney, Stephen C.; and Edwards, Charles L., to El Paso Products Company. Refining of tertiary butylstyrene. 4,543,437, Cl. 585-857.000.

Henery, James D.; Edwards, Charles L.; and McHaney, Stephen C., to El Paso Products Company. Tertiary-butylstyrene recovery. 4,543,438, Cl. 585-857.000.

Henkel Corporation: *See—*
Peerman, Dwight E.; and Rogier, Edgar R., 4,543,369, Cl. 521-137.000.

Hennemann, Hans: *See—*
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Henry, Harvey J.: *See—*
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Hepple, Jeffry S., to Hightec Manufacturing Corporation. Carpet vacuum, cleaning, and dyeing apparatus. 4,542,556, Cl. 15-321.000.

Herberts Gesellschaft mit beschraenkter Haftung: *See—*
Doebler, Klaus P.; Graf, Knut; Jager, Kurt E.; Johannsen, Friedrich; Ritz, Jurgen; and Saatweber, Dietrich, 4,543,375, Cl. 523-348.000.

Herliczek, Siegfried H.: *See—*
Curtze, Edward W.; and Herliczek, Siegfried H., 4,543,283, Cl. 428-38.000.

Herman, Stewart T.: *See—*
Rice, Michael A.; and Herman, Stewart T., 4,543,189, Cl. 210-713.000.

Herrin, Thomas R.: *See—*
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Herrmann, Guenter: *See—*
Hartig, Juergen; Stoessel, Armin; Herrmann, Guenter; and Marosi, Laszlo, 4,543,427, Cl. 568-342.000.

Hetemaa, Kalevi: *See—*
Halonen, Heino; Hetemaa, Kalevi; and Vainio, Frans, 4,543,026, Cl. 414-352.000.

Heyraud, Marc, to Portescap. Self-supporting rotor coil for dc-machine. 4,543,507, Cl. 310-266.000.

Heyward, Malcolm P.; and Young, Dennis, to British Petroleum p.l.c., The. Catalyst composition for conversion of synthesis gas to hydrocarbons. 4,543,347, Cl. 502-61.000.

Hicks, Raymond J.: *See—*
Allen, Kenneth D.; Brogdon, James W.; Barton, John S.; and Hicks, Raymond J., 4,542,658, Cl. 73-862.310.

Hieber, Konrad; and Mayer, Norbert, to Siemens Aktiengesellschaft. System for measuring electrical resistance and temperature during manufacture of thin, conductive films deposited on substrates by means of evaporation or sputter deposition. 4,543,576, Cl. 340-870.170.

Hightec Manufacturing Corporation: *See—*
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Higuchi, Kazuo: *See—*
Suhara, Akito; Takasugi, Kazuhiko; Sato, Toshihide; Ono, Masashi; Higuchi, Kazuo; and Chiba, Tatsuya, 4,543,378, Cl. 524-100.000.

Hikawa, Masanori; and Toyoda, Ippei, to Nihon Nohyaku Co., Ltd. Method for promoting crop growth. 4,543,119, Cl. 71-90.000.

Hildebrand, Otto, to Escher Wyss Limited. Multi-ply headbox having adjustable outlet slices. 4,543,162, Cl. 162-343.000.

Hill, Clifford W., to Union Carbide Corporation. Gas shielded arc torch and collet assembly. 4,543,461, Cl. 219-75.000.

Himmelmann, Wolgang, to Agfa-Gevaert Aktiengesellschaft. Process for hardening photographic gelatin with vinyl sulfones containing sulfonyl ethyl sulfate groups. 4,543,324, Cl. 430-622.000.

Himmelstein, Sydney, to S. Himmelstein and Company. Fluid leak testing method. 4,542,643, Cl. 73-49.200.

Hinden, Jean M.: *See—*
Beer, Henri B.; Katz, Michael; and Hinden, Jean M., 4,543,174, Cl. 204-290.00R.
Beer, Henri B.; Hinden, Jean M.; Honard, Mark R.; Bishara, Jeries I.; and Walker, Joseph K., Jr., 4,543,348, Cl. 502-101.000.

Hinkhouse, Lysle R.: *See—*
Bethell, George L.; Burch, Donald F.; and Hinkhouse, Lysle R., 4,542,887, Cl. 264-46.400.

Hirabayashi, Shigeto; Masukawa, Toyoaki; Ishikawa, Wataru; and Harada, Tetsuya, to Konishiroku Photo Industry Co., Ltd. Heat-developable image-pattern recording material. 4,543,309, Cl. 430-31.000.

Hirai, Hidematsu: *See—*
Kato, Yoshinori; Umemoto, Naoji; Hara, Takeshi; Tsukada, Yutaka; and Hirai, Hidematsu, 4,543,211, Cl. 260-112.00B.

Hirano, Hiroyuki: *See—*
Yamamuro, Sigeaki; Kumura, Haruyoshi; Tanaka, Yoshikazu; Abo, Keiju; and Hirano, Hiroyuki, 4,542,665, Cl. 74-866.000.
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,543,077, Cl. 474-12.000.

Hirano, Koichi: *See—*
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Hirata, Kazuyuki: *See—*
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Hiromae, Yoshitaka: *See—*
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Hirooka, Hiroshi; Yoshida, Yoshio; Fukushi, Toshio; and Takeya, Yasuo, to Mitsubishi Denki Kabushiki Kaisha; and Nihon Kentetsu Co., Ltd. Agitating type washing machine. 4,542,633, Cl. 68-12.00R.

Hirose, Toshifumi: *See—*
Isayama, Katsuhiko; Hirose, Toshifumi; and Kawakubo, Fumio, 4,543,403, Cl. 526-263.000.

Hirschfeld, Tomas B., to University of California, Regents of the. Temperature-sensitive optrode. 4,542,987, Cl. 356-44.000.

Hispano-Suiza: *See—*
Ville, Daniel; and Virmoux, Michel R. C., 4,543,074, Cl. 464-33.000.

Hitachi Chemical Company, Ltd.: *See—*
Ishii, Mitsuru; Akiyama, Seikichi; and Ishibashi, Hiroshi, 4,543,485, Cl. 250-487.100.

Hitachi, Ltd.: *See—*
Amada, Eiichi; Kuwahara, Hiroshi; Shirasu, Hirotoshi; Suzuki, Taihei; and Morita, Takashi, 4,543,652, Cl. 370-66.000.
Fukuta, Masaharu; Oshima, Yoshio; Ishikawa, Sako; and Ohtsuki, Toru, 4,543,641, Cl. 364-756.000.
Funabashi, Kiyomi; Kawamura, Fumio; Takagi, Toshio; Urata, Megumu; and Fukasawa, Tetsuo, 4,543,085, Cl. 494-30.000.
Fuyama, Moriaki; Tamura, Katsumi; Morijiri, Makoto; Sawahata, Mamoru; and Hachino, Hiroaki, 4,543,573, Cl. 340-781.000.
Kaneko, Kenji; Nagata, Minoru; Furihata, Makoto; Ogura, Setsuo; Okabe, Takahiro; and Sato, Mitsuya, 4,543,499, Cl. 307-477.000.
Kobori, Yasunori; Okamoto, Kaneyuki; Fukushima, Isao; Sekiya, Masataka; Nishijima, Hideo; Kano, Kenji; and Sakae, Tetsuo, 4,543,516, Cl. 318-318.000.
Kozima, Yasuyuki; Sato, Kunio; Tadauchi, Masaharu; Suehiro, Hiroshi; and Inoue, Yasuo, 4,543,644, Cl. 364-900.000.
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Mimura, Tomonori; Sagusa, Hisayuki; Satou, Takehide; and Takahashi, Katsuaki, 4,543,238, Cl. 422-63.000.
Murakami, Hiroya; and Takasaki, Mitsuhiro, 4,543,071, Cl. 445-66.000.
Okouchi, Isao; Takahashi, Sankichi; Izumi, Kenkichi; Miyai, Masahiko; and Otake, Katsumoto, 4,543,188, Cl. 210-304.000.
Ozawa, Naoki; Nagahara, Shusaku; Takahashi, Kenji; Takemoto, Iwao; Nishizawa, Shigeki; Sato, Masanori; and Suzuki, Satoshi, 4,543,610, Cl. 358-213.000.
Sakudo, Noriyuki; Abe, Katsunobu; Tokiguchi, Katsumi; Koike, Hidemi; and Okada, Osami, 4,543,465, Cl. 219-121.0PD.
Sato, Kazuo; Yamaguchi, Sumio; Kato, Shigeo; Matsumura, Yasuhide; Mizumoto, Muneo; Okuno, Sumio; and Tamura, Naoyuki, 4,542,712, Cl. 118-726.000.
Seki, Kunio; and Takeshita, Ritsuji, 4,543,539, Cl. 330-297.000.
Tanaka, Hideyo; and Harada, Mineo, 4,543,001, Cl. 400-212.000.

Hitachi Metals, Ltd.: *See—*
Iyori, Yusuke; and Takahashi, Norio, 4,543,343, Cl. 501-87.000.

Hitek Limited: *See—*
Bogwitz, Wolfram E. R.; Flecknoe-Brown, Anthony E.; and Duchovni, Naum, 4,543,054, Cl. 425-335.000.

Hochtemperatur-Reaktorbau GmbH: *See—*
Elter, Claus; Noll, Gerhard; Schoening, Josef; Schwiers, Hans-Georg; and Stracke, Wilfried, 4,543,232, Cl. 376-289.000.

Hoechst Aktiengesellschaft: *See*—
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, 4,543,217, Cl. 260-544.00A.
Hammer, Klaus-Dieter; Winter, Hermann; Kindl, Erwin; and Luchterhand, Heinz, 4,543,282, Cl. 428-36.000.
Schneider, Manfred; Deubel, Reinhold; and Zimmermann, Manfred, 4,543,380, Cl. 524-159.000.
Thoese, Klaus, 4,543,285, Cl. 428-201.000.
Thoese, Klaus, 4,543,316, Cl. 430-162.000.
Hoehn, Gustave L., Jr., to Mobil Oil Corporation. Method for controlling the depth of dragline excavating operations. 4,542,600, Cl. 37-195.000.
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Hogg, James W., to Anchor Wire Corporation. Single spring adjustable plate hanger. 4,542,876, Cl. 248-491.000.
Holce, Thomas J.; and Huckins, Charles M., to Sentrol, Inc. Switch and connector assembly including protective housings for jumper cable. 4,543,458, Cl. 200-61.700.
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Holloway, Peter R., to Analog Devices, Incorporated. Single-supply IC digital-to-analog converter for use with microprocessors. 4,543,561, Cl. 340-347.0DA.
Holset Engineering Company Limited: *See*—
French, Pierre B.; and Langdon, Paul J., 4,543,041, Cl. 416-183.000.
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Beer, Henri B.; Hinden, Jean M.; Honard, Mark R.; Bishara, Jeries I.; and Walker, Joseph K., Jr., 4,543,348, Cl. 502-101.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Fuse, Genzo, 4,542,845, Cl. 228-45.000.
Otobe, Yutaka; and Kishi, Noriyuki, 4,542,728, Cl. 123-440.000.
Sanada, Makoto, 4,542,651, Cl. 73-250.000.
Yamanaga, Junichi; and Naito, Shiro, 4,542,576, Cl. 29-568.000.
Yamato, Akihiro; and Otobe, Yutaka, 4,542,729, Cl. 123-440.000.
Honda, Masakazu: *See*—
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Honeycomb Systems, Inc.: *See*—
Bryand, Edward T.; and Randall, Kenneth R., 4,542,596, Cl. 34-115.000.
Honeywell Inc.: *See*—
Gorecki, James L., 4,543,498, Cl. 307-360.000.
Linder, William J., 4,543,540, Cl. 331-1.00A.
Westley, Curtis E., 4,542,812, Cl. 192-56.00R.
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Carey, Richard A.; and Falk, Jerry, 4,543,629, Cl. 364-200.000.
Honma, Toshio; Takeda, Hiroaki; and Suzuki, Tadashi, to Canon Kabushiki Kaisha. Image formation apparatus. 4,542,985, Cl. 355-69.000.
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Hooker, Donald E., to Bally Manufacturing Corporation. Game with an electromagnetic ball detector. 4,542,905, Cl. 273-121.00A.
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Hopp, Werner; and Marlorny, Bertold, to Siemens Aktiengesellschaft. Device for the accurate positioning of the LWL fiber ends of LWL components. 4,542,572, Cl. 29-281.500.
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Brown, George E., Jr.; and Hoppert, Bruce N., 4,543,104, Cl. 44-1.0SR.
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Hori, Yuka. Method for cutting out a front part of clothing. 4,542,586, Cl. 33-12.000.
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Kondo, Tatsuhei; Takabe, Noboru; and Horiba, Takeshi, 4,543,350, Cl. 514-18.000.
Horie, Hiromichi; Morita, Mikio; and Arima, Itsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic core and method of producing the same. 4,543,208, Cl. 252-62.540.
Horikawa, Yoshiaki, to Olympus Optical Company, Ltd. Focus detector. 4,543,476, Cl. 250-201.000.
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Horsma, David A.; Lyons, Bernard J.; and Smith-Johannsen, Robert, to Raychem Corporation. Layered self-regulating heating article. 4,543,474, Cl. 219-553.000.
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Bell, James L.; and Horvath, John, 4,543,028, Cl. 414-408.000.
Hoshino, Fumihiko; Yamaguchi, Takahiro; Abe, Nobuyuki; Watabe, Nobuyuki; Katzukura, Yoshiteru; Hoshino, Tadahiko; Utsumi, Yoko; and Kuroda, Yoko, to Teru Hoshino. Substance TH69E and immunopotentiator containing the same. 4,543,259, Cl. 424-116.000.
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Hayashida, Kenji, 4,543,459, Cl. 200-67.00D.
Hosomizu, Hiroshi: *See*—
Ishida, Tokuji; and Hosomizu, Hiroshi, 4,542,975, Cl. 354-416.000.
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Pavie, Claude, 4,542,818, Cl. 198-480.000.
Houng, Huang C. Detachable inflight headset for civil aircraft. 4,542,803, Cl. 181-129.000.
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Lloyd, Harry J., Jr.; Huggins, Hoyt W.; Lyon, Michael R.; Thayer, David N.; and McGovney, William E., 4,542,808, Cl. 186-56.000.
Houser, Clifford F. Hydrogen generator. 4,543,246, Cl. 423-648.00R.
Hovan, Edward J.; and Zimonis, Joseph P., to United Technologies Corporation. Air cooler for providing buffer air to a bearing compartment. 4,542,623, Cl. 60-226.100.
Hoverson, William D. Method and apparatus for making a Roman shade. 4,542,602, Cl. 38-102.100.
Howell, W. Max, to United States of America, Army. SSICM guidance and control concept. 4,542,870, Cl. 244-3.150.
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Quartino, Miguel A., 4,542,731, Cl. 124-24.00R.
HR Textron Inc.: *See*—
Scott, Richard D., 4,542,761, Cl. 137-68.00A.
Hsu, Kai, to Schlumberger Technology Corporation. Shot to shot processing for measuring a characteristic of earth formations from inside a borehole. 4,543,648, Cl. 367-29.000.
Huber, Guntram; Fischer, Wolfgang; and Klie, Wolfgang, to Daimler-Benz Aktiengesellschaft. Bumper for an automotive vehicle. 4,542,925, Cl. 293-120.000.
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Holce, Thomas J.; and Huckins, Charles M., 4,543,458, Cl. 200-61.700.
Huggins, Hoyt W.: *See*—
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Hansen, Siegfried, 4,543,642, Cl. 364-900.000.
Peters, John W., 4,543,271, Cl. 427-54.100.
Hughes Tool Company: *See*—
Garrett, William R., 4,542,797, Cl. 175-228.000.
Huignard, Jean Pierre; and LeDu, Bertrand, to Thomson-CSF. Optical beam switching device and telephone exchange comprising a device of this kind. 4,543,662, Cl. 455-600.000.
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Emery, Stephen G.; and Humble, Rick J., 4,542,829, Cl. 209-534.000.
Huret et ses Fils: *See*—
Coue, Maurice E. L., 4,543,078, Cl. 474-82.000.
Hurner, Erwin E. Engine detecting device. 4,542,718, Cl. 123-41.150.
Hutcheon, Ronald M., to Atomic Energy of Canada Limited. Off-axis electron gun. 4,543,509, Cl. 313-454.000.
Huynh, Van-Minh: *See*—
Osmera, Miroslav S.; Huynh, Van-Minh; and Calnek, Trevor A., 4,542,998, Cl. 400-139.000.
Hwang, Shih M. Burglar alarm with re-entry feature. 4,543,568, Cl. 340-528.000.
Hysek, Joerg-Manfred, to Jean Lassale S.A. Wristlet clasp with unfolding buckle. 4,542,561, Cl. 24-71.00R.
Ideas That Sell, Inc.: *See*—
Massino, Chester F., 4,542,902, Cl. 273-65.00A.
Idec Izumi Corporation: *See*—
Iwamoto, Kazumasa; Mabuchi, Naoki; and Kawano, Junji, 4,542,953, Cl. 339-198.0GA.
IFM Electronic GmbH: *See*—
Buck, Robert; and Lamarche, Jean L., 4,543,497, Cl. 307-308.000.
Igarashi, Tatsushi: *See*—
Arai, Tetsuji; and Igarashi, Tatsushi, 4,543,472, Cl. 219-411.000.
Iijima, Toshifumi; Nakagawa, Satoshi; and Menjo, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material. 4,543,323, Cl. 430-503.000.
Iizuka, Yoshio: *See*—
Matsunaga, Shigeo; Iizuka, Yoshio; and Suzuki, Tadaaki, 4,543,612, Cl. 358-261.000.
Ikebe, Tsuguo: *See*—
Nakao, Toru; Ikebe, Tsuguo; Tahara, Tetsuya; Maruyama, Yutaka; and Yaoka, Osamu, 4,543,354, Cl. 514-238.000.
Illinois Tool Works Inc.: *See*—
Carlson, Chester O., 4,543,148, Cl. 156-314.000.
Imai, Eiichi: *See*—
Murakawa, Kazunori; Mitsuhashi, Yasuo; Uchide, Hitoshi; Takagi, Seiichi; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; and Imai, Eiichi, 4,543,312, Cl. 430-107.000.
Imamura, Kosei: *See*—
Noda, Shigeo; Yamashita, Yasuhiro; and Imamura, Kosei, 4,543,636, Cl. 364-474.000.
Imanaka, Yoshiaki: *See*—
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Imori, Hideo: *See*—
Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, 4,543,504, Cl. 310-68.00D.

Imperial Chemical Industries Limited: *See—*
Briggs, Peter J.; McAloon, Kevin; and Rideal, Graham R., 4,543,287, Cl. 428-288.000.

Imperial Chemical Industries PLC: *See—*
Padget, John C.; and McIlrath, Donald H., 4,543,386, Cl. 524-523.000.
Padget, John C.; and McIlrath, Donald H., 4,543,387, Cl. 524-523.000.
Roberts, John S.; and Waite, Frederick A., 4,543,105, Cl. 44-55.000.

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Urata, Koichi; Takaishi, Naotake; Inamoto, Yoshiaki; and Suzuki, Yuji, 4,543,258, Cl. 514-772.000.

Indak Manufacturing Corp.: *See—*
Cobb, Albert R., III; and Black, Charles E., 4,543,454, Cl. 200-16.00A.

Industria & Moda di A. Pesek: *See—*
Kokrhanek, Vladimiro, 4,542,691, Cl. 101-114.000.

Industrie Pirelli S.p.A.: *See—*
Tangorra, Giorgio, 4,543,080, Cl. 474-204.000.

Ingenior Thor Furuholmen A/S: *See—*
Bjor, Hakon E., 4,542,794, Cl. 173-1.000.

Ingraham, John T.; and Mortimer, Gary A. Bird exerciser and amusement toy device. 4,542,714, Cl. 119-29.000.

Innovative Surgical Products, Inc.: *See—*
Wright, George M., 4,542,542, Cl. 62-6.000.

Innovus: *See—*
Renken, Wayne G.; and LeMay, Dan B., 4,542,650, Cl. 73-204.000.

Inokuchi, Haruhisa; and Sakai, Takami, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and system for terminating operation of an HVDC invertor. 4,543,492, Cl. 307-82.000.

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Inoue, Kiyoshi, 4,543,460, Cl. 219-69.00M.

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Kozima, Yasuyuki; Sato, Kunio; Tadauchi, Masaharu; Suehiro, Hiroshi; and Inoue, Yasuo, 4,543,644, Cl. 364-900.000.

Institut Francais du Petrole: *See—*
Dreuilhe, Jacques; Puff, Roger; Kita, Jean-Claude; and Large, Jean-Francois, 4,542,716, Cl. 122-4.00D.

Institut Merieux: *See—*
Tayot, Jean L.; and Veron, Jean L. B., 4,543,209, Cl. 260-112.00B.

Institute of Technology Precision Electrical Discharge Works: *See—*
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,543,050, Cl. 425-28.00D.

Instrument Specialties Co., Inc.: *See—*
Brewer, Ronald W., 4,543,447, Cl. 174-35.0GC.

Intel Corporation: *See—*
Mohsen, Amr M.; and Crook, Dwight L., 4,543,594, Cl. 357-51.000.

International Business Machines Corporation: *See—*
Chao, Vivian W.; Kaufman, Frank B.; Kramer, Steven R.; and Lin, Burn J., 4,543,319, Cl. 430-312.000.
Gillett, John B.; and Miraglia, John A., 4,542,950, Cl. 339-75.0MP.
Jackson, Thomas N., 4,542,577, Cl. 29-571.000.
Leveretl, Theodore W.; and Musits, Bela, 4,543,032, Cl. 414-730.000.
Poponiak, Michael R.; and Schwenker, Robert O., 4,542,579, Cl. 29-576.00W.
Yang, Kie-Hsiung, 4,542,960, Cl. 350-336.000.

International Flavors & Fragrances Inc.: *See—*
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,543,192, Cl. 252-8.600.
Licciardello, Michael; and Boden, Richard M., 4,543,203, Cl. 252-522.00R.
Rutherford, Howard J.; and Withycombe, Donald A., 4,543,367, Cl. 521-79.000.

International Minerals & Chemical Corp.: *See—*
Jacobs, Martin J., 4,543,239, Cl. 423-321.00S.

International Telephone and Telegraph Corporation: *See—*
Couch, Philip R., 4,543,664, Cl. 455-601.000.

Interpace Corporation: *See—*
Moran, John H., 4,543,523, Cl. 324-51.000.

Intersteel Technology, Inc.: *See—*
Vallomy, John A., 4,543,124, Cl. 75-46.000.

Inui, Toshiharu: *See—*
Kurata, Masami; and Inui, Toshiharu, 4,543,587, Cl. 346-76.0PH.

Ippen, Heiko, to Confon AG. Apparatus for the storing and recovery of information, subscriber's numbers, subscriber's addresses, etc. 4,543,452, Cl. 179-90.00B.

Irie, Yutaka: *See—*
Shibazaki, Kenji; Irie, Yutaka; Ito, Masazumi; and Murata, Tomoji, 4,543,643, Cl. 364-900.000.

Irwin, Lawrence F. Impact device. 4,542,543, Cl. 4-255.000.

Isayama, Katsuhiko; Hirose, Toshifumi; and Kawakubo, Fumio, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Curable composition. 4,543,403, Cl. 526-263.000.

Ishibashi, Hiroshi: *See—*
Ishii, Mitsuru; Akiyama, Seikichi; and Ishibashi, Hiroshi, 4,543,485, Cl. 250-487.100.

Ishida, Tokuji; and Hosomizu, Hiroshi, to Minolta Camera Kabushiki Kaisha. Camera flash light control circuitry. 4,542,975, Cl. 354-416.000.

Ishii, Kazumi: *See—*
Kamogawa, Ninichi; Ueno, Kenji; and Ishii, Kazumi, 4,542,977, Cl. 355-3.0CH.

Ishii, Mitsuru; Akiyama, Seikichi; and Ishibashi, Hiroshi, to Hitachi Chemical Company, Ltd. Scintillator for radiation detection and process for producing the same. 4,543,485, Cl. 250-487.100.

Ishikawa, Sako: *See—*
Fukuta, Masaharu; Oshima, Yoshio; Ishikawa, Sako; and Ohtsuki, Toru, 4,543,641, Cl. 364-756.000.

Ishikawa, Takatoshi; and Nakajima, Junya, to Fuji Photo Film Co., Ltd. Process for the processing of color photographic silver halide light-sensitive material. 4,543,322, Cl. 430-380.000.

Ishikawa, Wataru: *See—*
Hirabayashi, Shigeto; Masukawa, Toyoaki; Ishikawa, Wataru; and Harada, Tetsuya, 4,543,309, Cl. 430-31.000.

Ishikura, Shinichi; Yoshioka, Tamotsu; and Mizuguchi, Ryuzo, to Nippon Paint Co., Ltd. Polymerizable amino acid compounds and their production. 4,543,216, Cl. 260-501.120.

Ishiwari, Kazuo; Ohmori, Akira; Tomihashi, Nobuyuki; Yuhara, Sumiko; Kaino, Toshikuni; Jinguji, Kaname; and Nara, Shigeo, to Nippon Telegraph and Telephone Public Corporation; and Kaikiu Kogyo Co. Ltd. Plastics optical fibers. 4,542,957, Cl. 350-96.340.

Ishizumi, Kikuo; Antoku, Fujio; and Asami, Yukio, to Sumitomo Chemical Company, Limited. Substituted succinimides, compositions and method of use. 4,543,355, Cl. 514-253.000.

Itagaki, Takaharu; Ito, Tsuyoshi; Ando, Kiyoto; and Teshima, Hiromi, to Mitsubishi Chemical Industries Ltd. Method for increasing the porosity of a cross-linked copolymer. 4,543,365, Cl. 521-53.000.

Ito, Hiroshi: *See—*
Kobayashi, Nobuyuki; Ito, Hiroshi; and Sugiura, Yoichi, 4,543,634, Cl. 364-431.070.

Ito, Kenzo; and Mizobata, Shiro, to Matsushita Electric Works, Ltd. Hair clipper. 4,542,585, Cl. 30-210.000.

Ito, Masazumi: *See—*
Shibazaki, Kenji; Irie, Yutaka; Ito, Masazumi; and Murata, Tomoji, 4,543,643, Cl. 364-900.000.

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Itagaki, Takaharu; Ito, Tsuyoshi; Ando, Kiyoto; and Teshima, Hiromi, 4,543,365, Cl. 521-53.000.

Itoh, Masayuki: *See—*
Nagasawa, Shiro; Morimoto, Naruaki; Fujimura, Toshio; Itoh, Masayuki; and Taniguchi, Shinya, 4,542,730, Cl. 123-489.000.

Itou, Zyouzi, to Toyota Jidosha Kabushiki Kaisha. Air conditioner for a coating booth. 4,542,851, Cl. 236-44.00C.

Itsumi, Manabu; Ehara, Kohei; Muramoto, Susumu; and Matsuo, Seitaro, to Nippon Telegraph and Telephone Public Corporation. Semiconductor integrated circuits and manufacturing process thereof. 4,543,592, Cl. 357-43.000.

ITT Corporation: *See—*
Craine, Richard W.; and Drabick, Joseph P., 4,543,545, Cl. 333-128.000.
Kraushaar, Robert J., 4,542,988, Cl. 356-352.000.

ITT Industries, Inc.: *See—*
Berisch, Volker; and Birkenbach, Alfred, 4,542,945, Cl. 303-6.00C.

Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Electric current rectifier. 4,543,504, Cl. 310-68.00D.

Iwamoto, Kazumasa; Mabuchi, Naoki; and Kawano, Junji, to Idec Izumi Corporation. Wire connection terminal stage for electric apparatus. 4,542,953, Cl. 339-198.0GA.

Iwasaki, Masayuki: *See—*
Maeda, Minoru; Iwasaki, Masayuki; and Shinozaki, Fumiaki, 4,543,318, Cl. 430-288.000.

Iwata, Masayosi; Douke, Harumi; and Sawada, Hiroyuki, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Switch device for vehicle-speed control. 4,543,456, Cl. 200-61.540.

Iwatsu Electric Co., Ltd.: *See—*
Saito, Kimiharu, 4,543,508, Cl. 313-429.000.

Iyori, Yusuke; and Takahashi, Norio, to Hitachi Metals, Ltd. Ceramics for cutting tools. 4,543,343, Cl. 501-87.000.

Izu, Masatsugu; and Ovshinsky, Herbert C., to Sovonics Solar Systems. Continuous system for depositing amorphous semiconductor material. 4,542,711, Cl. 118-718.000.

Izumi, Kenkichi: *See—*
Okouchi, Isao; Takahashi, Sankichi; Izumi, Kenkichi; Miyai, Masahiko; and Otake, Katsumoto, 4,543,188, Cl. 210-304.000.

J. D. & C., Inc.: *See—*
Fatool, Francis N.; and Gordon, James L., 4,542,901, Cl. 273-25.000.

J. M. Voith GmbH: *See—*
Lindenthal, Hans, 4,543,011, Cl. 403-338.000.

Jack, Douglas S.: *See—*
Spence, J. Ronald; and Jack, Douglas S., 4,543,194, Cl. 252-33.000.

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Jacobs, Martin J., to International Minerals & Chemical Corp. Phosphoric acid extraction process. 4,543,239, Cl. 423-321.00S.

Jager, Kurt E.: *See—*
Doebler, Klaus P.; Graf, Knut; Jager, Kurt E.; Johannsen, Friedrich; Ritz, Jurgen; and Saatweber, Dietrich, 4,543,375, Cl. 523-348.000.

James River-Norwalk, Inc.: *See—*
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,543,156, Cl. 162-101.000.

James River Pepperell, Inc.: *See*—
Jones, Harold R.; and Saila, Karl F., 4,543,157, Cl. 162-134.000.

Janda, Bruce W.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,543,156, Cl. 162-101.000.

Jang, Young H. Tool handle. 4,542,667, Cl. 81-177.200.

Janome Sewing Machine Industry Co., Ltd.: *See*—
Hanyu, Susumu; Hara, Kazumasa; and Koike, Mikio, 4,542,706, Cl. 112-229.000.

Jao, Yun C.; and Good, Ivan C., to Miles Laboratories, Inc. Method for the preparation of spherical microorganism cell aggregates. 4,543,332, Cl. 435-180.000.

Japan Metals & Chemicals Co., Ltd.: *See*—
Karasawa, Tadayoshi; Kawano, Katsumi; Uchiyama, Katsuji; and Yamazaki, Michio, 4,543,197, Cl. 252-62.560.

Jarecki Industries: *See*—
Kulisek, Robert P., 4,542,878, Cl. 251-315.000.

Jarrell, Donald L.: *See*—
Brooker, Lenon G.; and Jarrell, Donald L., 4,543,290, Cl. 428-336.000.

Jarret, Jacques H.; and Jarret, Jean-Marie B. Magnetic ring for free piston rectilinear generators. 4,543,502, Cl. 310-15.000.

Jarret, Jean-Marie B.: *See*—
Jarret, Jacques H.; and Jarret, Jean-Marie B., 4,543,502, Cl. 310-15.000.

Jasniewski, Henry E. Tool for forming a folded pastry. 4,543,053, Cl. 425-289.000.

Jean Lassale S.A.: *See*—
Hysek, Joerg-Manfred, 4,542,561, Cl. 24-71.00R.

Jenkins, John M., III; Jones, Russell L.; and Jones, Thomas M., to Union Carbide Corporation. Fluidized bed reaction systems. 4,543,399, Cl. 526-70.000.

Jensen, Ole R., to E. R. Squibb & Sons, Inc. Visual flow indicator. 4,543,095, Cl. 604-246.000.

Jincks, Danny C.: *See*—
Menke, W. Kenneth; and Jincks, Danny C., 4,543,622, Cl. 362-219.000.

Jinguji, Kaname: *See*—
Ishiwari, Kazuo; Ohmori, Akira; Tomihashi, Nobuyuki; Yuhara, Sumiko; Kaino, Toshikuni; Jinguji, Kaname; and Nara, Shigeo, 4,542,957, Cl. 350-96.340.

Johannesburg Consolidated Investment Company Limited: *See*—
Bodenstein, Johannes J.; and Farrell, Leslie J., 4,543,122, Cl. 75-0.50B.

Johannsen, Friedrich: *See*—
Doebler, Klaus P.; Graf, Knut; Jager, Kurt E.; Johannsen, Friedrich; Ritz, Jurgen; and Saatweber, Dietrich, 4,543,375, Cl. 523-348.000.

Johansson, Evert Martin. Joint element to support and secure shelves in a bookcase or stand, and a set of shelves employing said joint elements to support and secure the shelves between the uprights. 4,542,702, Cl. 108-109.000.

Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Dynamically controlled scene radiation leakage for exposure control. 4,542,973, Cl. 354-413.000.

Johnson, Carl J.: *See*—
Johnson, Richard L.; and Johnson, Carl J., 4,542,545, Cl. 4-555.000.

Johnson, Carl W., to Kimberly-Clark Corporation. Compact tampon applicator. 4,543,086, Cl. 604-11.000.

Johnson, Howard L.: *See*—
Berger, Frank M.; DeGraw, Joseph I., Jr.; and Johnson, Howard L., 4,543,362, Cl. 514-480.000.

Johnson, Marvin M.; and Nowack, Gerhard P., to Phillips Petroleum Company. Chromium phosphate as an alkylation catalyst. 4,543,436, Cl. 585-466.000.

Johnson, Reaves, to RJM, Inc. Green peanut destemmer and washer. 4,542,687, Cl. 99-639.000.

Johnson, Richard L.; and Johnson, Carl J. Bathtub with footwell and entrance door. 4,542,545, Cl. 4-555.000.

Johnson, Robert M.; and Melling, Elmer M., to National Gypsum Company. Reinforced cement sheet product containing no asbestos for fabricating on Hatschek machine. 4,543,159, Cl. 162-164.100.

Johnson, Robert R.: *See*—
Cantrell, Daniel V.; and Johnson, Robert R., 4,542,754, Cl. 131-336.000.

Johnson, Rodney C., to Bestobell Sparling Limited. Fluid flow monitoring. 4,542,656, Cl. 73-861.280.

Jones, Donald J., to Wang Laboratories, Inc. Interfacing a communication network. 4,543,654, Cl. 370-94.000.

Jones, Frederick W. S.; and Smith, Frank, to C-I-L Inc. Use of high silicon Cr Ni steel in H_2SO_4 manufacture. 4,543,244, Cl. 423-522.000.

Jones, Harold R.; and Saila, Karl F., to James River Pepperell, Inc. Method and apparatus for the manufacture of variegated paper webs. 4,543,157, Cl. 162-134.000.

Jones, Michael N. Roller pallet system for loading vehicles on a train. 4,543,027, Cl. 414-400.000.

Jones, Russell L.: *See*—
Jenkins, John M., III; Jones, Russell L.; and Jones, Thomas M., 4,543,399, Cl. 526-70.000.

Jones, Thomas M.: *See*—
Jenkins, John M., III; Jones, Russell L.; and Jones, Thomas M., 4,543,399, Cl. 526-70.000.

Joo, Istvan; Schutz, Lajos; Sarosi, Jozsef; Szabo, Sandor P.; Taal, Janos; and Szebenyi, Otto , to Csepel Muvek Szerszamgepgyara. Process and switching circuit for the positional control of radial drilling machines. 4,543,635, Cl. 364-474.000.

Jostad, Ray E.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,543,156, Cl. 162-101.000.

Juillard, Yves: *See*—
Scherrer, Pascal; and Juillard, Yves, 4,542,816, Cl. 139-448.000.

Julich, Werner, to Sulzer Brothers Limited. Coupling arrangement for controlling the harnesses in a weaving machine. 4,542,769, Cl. 139-66.00R.

Jung, Harald: *See*—
Schafer, Ewald; and Jung, Harald, 4,542,739, Cl. 128-156.000.

Kabata, Tunetoshi: *See*—
Yamato, Toshio; Ohba, Tsutomu; and Kabata, Tunetoshi, 4,543,219, Cl. 261-109.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Yoshimura, Yukio, 4,542,795, Cl. 173-2.000.

Kabushiki Kaisha Riken: *See*—
Chiba, Ko; Wada, Yoshiaki; Miida, Hiroshi; and Ono, Sumio, 4,542,907, Cl. 277-140.000.

Kabushiki Kaisha Sato: *See*—
Kikuchi, Reiji, 4,542,690, Cl. 101-27.000.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Iwata, Masayosi; Douke, Harumi; and Sawada, Hiroyuki, 4,543,456, Cl. 200-61.540.
Suzuki, Masaru, 4,543,515, Cl. 318-293.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Tooka, Takuzo; Nozaki, Choji; Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Yamaoka, Yoshiaki; Goto, Hiroaki; and Miura, Yasuhiro, 4,542,560, Cl. 19-98.000.

Kabushiki Kaisha Yamada Dobby: *See*—
Yoshida, Fumio, 4,542,770, Cl. 139-68.000.

Kaether, Willy. Apparatus for reducing the liquid content of sugar cane bagasse. 4,543,129, Cl. 127-5.000.

Kageyama, Bunji: *See*—
Sonoyama, Takayasu; Yagi, Shigeo; and Kageyama, Bunji, 4,543,331, Cl. 435-138.000.

Kai, Hisao, to Taisei Kako Kabushiki Kaisha. Plastic film product. 4,543,279, Cl. 428-35.000.

Kai, Tooru; and Hayashi, Chikahisa, to Toyoda Gosei Co., Ltd. Surface inspection method. 4,543,602, Cl. 358-106.000.

Kaij, Mats: *See*—
Santen, Sven; Mogensen, Palne; Kaij, Mats; and Thornblom, Jan, 4,543,470, Cl. 219-383.000.

Kaikiu Kogyo Co. Ltd.: *See*—
Ishiwari, Kazuo; Ohmori, Akira; Tomihashi, Nobuyuki; Yuhara, Sumiko; Kaino, Toshikuni; Jinguji, Kaname; and Nara, Shigeo, 4,542,957, Cl. 350-96.340.

Kaino, Toshikuni: *See*—
Ishiwari, Kazuo; Ohmori, Akira; Tomihashi, Nobuyuki; Yuhara, Sumiko; Kaino, Toshikuni; Jinguji, Kaname; and Nara, Shigeo, 4,542,957, Cl. 350-96.340.

Kakutani, Haruko: *See*—
Sakagami, Teruo; Arakawa, Noriyuki; and Kakutani, Haruko, 4,543,294, Cl. 428-422.000.

Kaminski, Christopher A.; and Williams, Edward K., to General Electric Company. Ventilated end turns for rotor windings of a dynamoelectric machine. 4,543,503, Cl. 310-59.000.

Kamishita, Takuzo, to Toko Yakuhin Industry Co., Ltd. Gel preparations for external application. 4,543,251, Cl. 424-81.000.

Kamiyama, Kouzi, to Fuji Photo Film Co., Ltd. Ferrite magnetic material for magnetic recording and process for the preparation thereof. 4,543,198, Cl. 252-62.590.

Kamogawa, Ninichi; Ueno, Kenji; and Ishii, Kazumi, to Konishiroku Photo Industry Co., Ltd. Method and apparatus for separating recording paper from image retaining member. 4,542,977, Cl. 355-3.0CH.

Kampfer, Helmut: *See*—
Schumann, Hans-Joachim; Ohlschlager, Hans; and Kampfer, Helmut, 4,543,308, Cl. 430-21.000.

Kampfer, John G.: *See*—
Nunley, Allen; and Kampfer, John G., 4,543,478, Cl. 250-261.000.

Kamyr, Inc.: *See*—
Greenwood, Brian F., 4,543,181, Cl. 209-273.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Isayama, Katsuhiko; Hirose, Toshifumi; and Kawakubo, Fumio, 4,543,403, Cl. 526-263.000.

Kaneko, Ichiro: *See*—
Tsuchida, Michinori; Shimizu, Toshihide; Kaneko, Ichiro; and Abe, Tokuji, 4,543,382, Cl. 524-267.000.

Kaneko, Kenji; Nagata, Minoru; Furihata, Makoto; Ogura, Setsuo; Okabe, Takahiro; and Sato, Mitsuya, to Hitachi, Ltd. I^2L circuitry having operating current supplied by higher-voltage circuitry fabricated on same chip. 4,543,499, Cl. 307-477.000.

Kaneko, Ryoichi: *See*—
Fujita, Yuji; Wakasugi, Keizo; and Kaneko, Ryoichi, 4,543,280, Cl. 428-35.000.

Kaneko, Takashi: *See*—
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,542,886, Cl. 264-22.000.

Kaneko, Takeru; Ozaki, Satoru; Takizawa, Kimie; and Sugimoto, Hachiro, to Eisai Co., Ltd. Antiphlogistic/antipyretic/analgesic agents containing theobromine or theophylline derivatives as active ingredient. 4,543,254, Cl. 514-253.000.

Kano, Kenji: *See—*
Kobori, Yasunori; Okamoto, Kaneyuki; Fukushima, Isao; Sekiya, Masataka; Nishijima, Hideo; Kano, Kenji; and Sakae, Tetsuo, 4,543,516, Cl. 318-318.000.

Kao Corporation: *See—*
Urata, Koichi; Takaishi, Naotake; Inamoto, Yoshiaki; and Suzuki, Yuji, 4,543,258, Cl. 514-772.000.

Karasawa, Tadayoshi; Kawano, Katsumi; Uchiyama, Katsuji; and Yamazaki, Michio, to Japan Metals & Chemicals Co., Ltd.; and Magune Co., Ltd. Process for producing magnetic metallic oxide. 4,543,197, Cl. 252-62.560.

Karl Otto Braun Kg, Firma: *See—*
Schafer, Ewald; and Jung, Harald, 4,542,739, Cl. 128-156.000.

Karlstrom, J. Krister, to AudioPro Marketing. Vehicular alarm triggering system. 4,543,569, Cl. 340-539.000.

Karplus, Henry B.: *See—*
Claytor, Thomas N.; and Karplus, Henry B., 4,542,644, Cl. 73-61.00R.

Karr, Steven G.: *See—*
Barber, William D.; Eberhard, Jeffrey W.; and Karr, Steven G., 4,542,657, Cl. 73-861.250.

Kasahara, Hideo; Suzuki, Hiroshi; and Umeda, Noriaki, to Asahi-Dow Limited. Polymeric materials and novel thermoplastic resin compositions. 4,543,392, Cl. 525-90.000.

Kasamura, Toshirou, to Canon Kabushiki Kaisha. Partially openable image forming apparatus. 4,542,976, Cl. 355-3.00R.

Kase, Oldrich; and Loucansky, Stanislav, to ELITEX, koncern textilniho strojirenstvi. Apparatus for cleaning a rotor of an open-end spinning unit. 4,542,620, Cl. 57-302.000.

Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 4,542,916, Cl. 280-642.000.

Kassai, Kenzou, to Kassai Kabushikikaisha. Mechanism for locking the opened state of a baby carriage. 4,542,916, Cl. 280-642.000.

Kasser, Jurgen, to Blaupunkt-Werke GmbH. Digital FM demodulator. 4,543,532, Cl. 329-110.000.

Kasuya, Kazuki, to Chlorine Engineers Corp. Ltd. Method for production of a cathode for use in electrolysis. 4,543,265, Cl. 427-34.000.

Kato, Hiroshi: *See—*
Chiba, Tomosuke; Kato, Hiroshi; and Suganuma, Takashi, 4,543,510, Cl. 313-477.00R.

Kato, Hisanori; and Okawa, Masao, to Sumitomo Heavy Industries, Ltd. Cam-type hydraulic driving device. 4,542,660, Cl. 74-27.000.

Kato, Hisatoyo, to Fuji Photo Film Co. Ltd. Radiation image recording and read-out system. 4,543,479, Cl. 250-327.200.

Kato, Hisatoyo, to Fuji Photo Film Co. Ltd. Radiation image recording system. 4,543,480, Cl. 250-327.200.

Kato, Masayuki: *See—*
Ueda, Ikuo; Kato, Masayuki; and Nagano, Masanobu, 4,543,356, Cl. 514-259.000.

Kato, Shigeo: *See—*
Sato, Kazuo; Yamaguchi, Sumio; Kato, Shigeo; Matsumura, Yasuhide; Mizumoto, Muneo; Okuno, Sumio; and Tamura, Naoyuki, 4,542,712, Cl. 118-726.000.

Kato, Yoshiei: *See—*
Sudo, Fumio; Fujii, Tetsuya; Kato, Yoshiei; Yamada, Sumio; and Emoto, Kanji, 4,543,125, Cl. 75-51.500.

Kato, Yoshinori; Umemoto, Naoji; Hara, Takeshi; Tsukada, Yutaka; and Hirai, Hidematsu, to Teijin Limited. Conjugate having cytotoxicity and process for the preparation thereof. 4,543,211, Cl. 260-112.00B.

Katz, Michael: *See—*
Beer, Henri B.; Katz, Michael; and Hinden, Jean M., 4,543,174, Cl. 204-290.00R.

Katz, Philip: *See—*
Brenman, Henry S.; Katz, Philip; and Schwartz, Harold L., 4,542,753, Cl. 128-788.000.

Katzukura, Yoshiteru: *See—*
Hoshino, Fumihiko; Yamaguchi, Takahiro; Abe, Nobuyuki; Watabe, Nobuyuki; Katzukura, Yoshiteru; Hoshino, Tadahiko; Utsumi, Yoko; and Kuroda, Yoko, 4,543,259, Cl. 424-116.000.

Kaufman, Frank B.: *See—*
Chao, Vivian W.; Kaufman, Frank B.; Kramer, Steven R.; and Lin, Burn J., 4,543,319, Cl. 430-312.000.

Kausche, Helmold: *See—*
Moeller, Matthias; and Kausche, Helmold, 4,543,443, Cl. 136-256.000.

Kavesh, Sheldon: *See—*
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,543,286, Cl. 428-288.000.

Kawabata, Susumu: *See—*
Tooka, Takuzo; Nozaki, Choji; Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Yamaoka, Yoshiaki; Goto, Hiroaki; and Miura, Yasuhiro, 4,542,560, Cl. 19-98.000.

Kawada, Hiroshi: *See—*
Yamano, Masaru; Nagaoka, Isao; Kuwano, Yukinori; Kawada, Hiroshi; and Sakai, Souichi, 4,542,578, Cl. 29-572.000.

Kawada, Shigeki; Amemiya, Yoichi; and Sogabe, Masatoyo, to Fanuc Ltd. Permanant magnet field type rotor structure for an electric machine. 4,543,506, Cl. 310-156.000.

Kawahara, Yoshiaki: *See—*
Abe, Norio; and Kawahara, Yoshiaki, 4,543,149, Cl. 156-350.000.

Kawakami, Shigenobu: *See—*
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,543,207, Cl. 252-570.000.

Kawakita, Tetsuya: *See—*
Morimoto, Hideyuki; Saeki, Masaru; and Kawakita, Tetsuya, 4,543,330, Cl. 435-110.000.

Kawakubo, Fumio: *See—*
Isayama, Katsuhiko; Hirose, Toshifumi; and Kawakubo, Fumio, 4,543,403, Cl. 526-263.000.

Kawamura, Fumio: *See—*
Funabashi, Kiyomi; Kawamura, Fumio; Takagi, Toshio; Urata, Megumu; and Fukasawa, Tetsuo, 4,543,085, Cl. 494-30.000.

Kawamura, Hideaki: *See—*
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, 4,543,625, Cl. 364-169.000.

Kawano, Junji: *See—*
Iwamoto, Kazumasa; Mabuchi, Naoki; and Kawano, Junji, 4,542,953, Cl. 339-198.0GA.

Kawano, Katsumi: *See—*
Karasawa, Tadayoshi; Kawano, Katsumi; Uchiyama, Katsuji; and Yamazaki, Michio, 4,543,197, Cl. 252-62.560.

Kawasaki, Hiroshi: *See—*
Kumada, Masaharu; Tanabe, Hideo; Yuhara, Katsuo; Misumi, Akira; and Kawasaki, Hiroshi, 4,543,441, Cl. 136-249.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Matsui, Shigetomo; Atsuta, Toshio; and Toma, Shouji, 4,542,846, Cl. 228-112.000.

Kawasaki Steel Corporation: *See—*
Sudo, Fumio; Fujii, Tetsuya; Kato, Yoshiei; Yamada, Sumio; and Emoto, Kanji, 4,543,125, Cl. 75-51.500.

Keene, Thomas. Eyedrop dispenser with eyelid opening means. 4,543,096, Cl. 604-300.000.

Kehoe, Lawrence C. Method and apparatus for manufacturing splined corner joints. 4,542,776, Cl. 144-353.000.

Kellar, Paul R. N.: *See—*
Taylor, Richard J.; Kellar, Paul R. N.; and Greenhalgh, Stephen P., 4,543,607, Cl. 358-140.000.

Keller, Franz; and Hennemann, Hans, to Boehringer Mannheim GmbH. Process for detecting pathogens. 4,543,328, Cl. 435-30.000.

Keller, Hannah R. Swimming pool cleaning device. 4,542,549, Cl. 15-1.700.

Kelly, Robert M.: *See—*
Oakley, Clyde G.; Guess, Joe F.; Robbins, Cheston W.; Kelly, Robert M.; Skaar, Dean N.; and Walker, Stephen D., 4,542,745, Cl. 252-312.000.

Kennametal Inc.: *See—*
Montgomery, Robert H., Jr., 4,542,943, Cl. 299-93.000.

Kennedy, Robert J., Jr.; Smith, Kendall S., II; and Brown, Gregory N., to Ristance Corporation. Display package. 4,542,822, Cl. 206-45.330.

Kerttula, Reima; and Eskelinen, Pekka, to Valmet Oy. Method and device for guiding the leader of the web in the drying section of a paper machine. 4,543,160, Cl. 162-193.000.

Kerttula, Reima: *See—*
Viitanen, Olavi; and Kerttula, Reima, 4,542,593, Cl. 34-41.000.

Kesten, Martin, to Preston Engravers, Inc. Assembly for rotary die cutting utilizing a shaftless roll. 4,542,671, Cl. 83-343.000.

Kijima, Takao; and Maebayashi, Jiro, to Mazda Motor Corporation. Vehicle rear-suspension mechanism. 4,542,920, Cl. 280-701.000.

Kikuchi, Reiji, to Kabushiki Kaisha Sato. Heat-sensitive printing machine. 4,542,690, Cl. 101-27.000.

Kimberly-Clark Corporation: *See—*
Johnson, Carl W., 4,543,086, Cl. 604-11.000.
Kuepper, Daniel H.; and Allen, Peter J., 4,543,142, Cl. 156-209.000.
Selke, William A.; and Cartwright, William F., 4,542,755, Cl. 131-370.000.
Wolfe, Dexter L.; and Peerenboom, Robert J., 4,543,098, Cl. 604-370.000.

Kimura, Hiroyuki: *See—*
Yamada, Tateo; Kimura, Hiroyuki; and Taka, Hideo, 4,542,865, Cl. 242-205.000.

Kimura, Kiyoshi: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; and Gunji, Kouichi, 4,542,978, Cl. 355-3.0TR.

Kindl, Erwin: *See—*
Hammer, Klaus-Dieter; Winter, Hermann; Kindl, Erwin; and Luchterhand, Heinz, 4,543,282, Cl. 428-36.000.

Kingsley, Warren G.: *See—*
Baltz, Gene F.; and Kingsley, Warren G., 4,542,726, Cl. 123-320.000.

Kirby, Ian J. Combination workbench, veneer press and case goods assembly press. 4,542,891, Cl. 269-16.000.

Kiritani, Masataka; Asao, Yasuzi; and Takayanagi, Takashi, to Fuji Photo Film Co., Ltd. Process for producing supports for photographic paper. 4,543,269, Cl. 427-44.000.

Kishi, Norimasa: *See—*
Tachibana, Akira; Fujiki, Norio; Endo, Hiroshi; Yamaki, Kiyoshi; and Kishi, Norimasa, 4,543,577, Cl. 340-904.000.

Kishi, Noriyuki: *See—*
Otobe, Yutaka; and Kishi, Noriyuki, 4,542,728, Cl. 123-440.000.

Kishimoto, Akihiko: *See—*
Tanaka, Masayuki; Morioka, Katsuharu; and Kishimoto, Akihiko, 4,543,390, Cl. 525-63.000.

Kita, Jean-Claude: *See—*
Dreuilhe, Jacques; Puff, Roger; Kita, Jean-Claude; and Large, Jean-Francois, 4,542,716, Cl. 122-4.00D.

Kitaguchi, Sam S., to Garrett Corporation, The. Sealing apparatus and method and machinery utilizing same. 4,543,038, Cl. 415-112.000.

Kiuchi, Mikiho: *See*—
Matsuo, Seitaro; Kiuchi, Mikiho; and Sekimoto, Misao, 4,543,266, Cl. 427-38.000.

Kleinschmidt, Lothar; Wallroth, Carl F.; and Harms, Heye, to Dragerwerk Aktiengesellschaft. Gas dosing device for medical apparatus. 4,542,740, Cl. 128-204.210.

Klenk, Martin: *See*—
Britsch, Heinz; Klenk, Martin; Linder, Ernst; and Moser, Winfried, 4,542,727, Cl. 123-435.000.

Klie, Wolfgang: *See*—
Huber, Guntram; Fischer, Wolfgang; and Klie, Wolfgang, 4,542,925, Cl. 293-120.000.

Klockner-Werke Aktiengesellschaft: *See*—
Kreyenhop, Manfred, 4,542,781, Cl. 164-451.000.

Klotzsch, Sigrid G.; and Vadaszy, Richard, to Technicon Instruments Corporation. Stabilizer for urea nitrogen color reagent. 4,543,337, Cl. 436-108.000.

Kluender, Harold C.: *See*—
Corey, Paul F.; and Kluender, Harold C., 4,543,421, Cl. 560-106.000.

Knaudt, Hermann. Shoulder-hand support for photographic apparatus. 4,542,966, Cl. 354-82.000.

Knifton, John F.; and Alexander, David C., to Texaco Inc. Process for selective preparation of secondary and tertiary amines. 4,543,411, Cl. 544-178.000.

Knollmann, Fritz. Device for treating photo printing plates. 4,542,968, Cl. 354-322.000.

Knothe, Erich; Eger, Matthias; Stadler, Eberhard; and Engelhardt, Herbert, to Sartorius GmbH. Spring body with integrated parallel guide for a balance with an upper scale. 4,542,800, Cl. 177-211.000.

Knubley, John S.: *See*—
Sparks, David J.; Whitefoot, Keith; and Knubley, John S., 4,542,836, Cl. 222-27.000.

Knutti, James W.: *See*—
Petersen, Kurt E.; Allen, Henry V.; and Knutti, James W., 4,543,457, Cl. 200-83.00N.

Koball, Bruce R.: *See*—
Bilbrey, Robert A.; and Koball, Bruce R., 4,543,571, Cl. 340-710.000.

Kobayashi, Akio: *See*—
Harada, Takashi; Kobayashi, Akio; Honda, Masakazu; Harada, Susumu; Fujimoto, Masaya; and Suzuki, Masatoshi, 4,543,176, Cl. 204-406.000.

Kobayashi, Nobuyuki; Ito, Hiroshi; and Sugiura, Yoichi, to Toyota Jidosha Kabushiki Kaisha. Electronic engine control system. 4,543,634, Cl. 364-431.070.

Kobayashi, Yoshiaki, to Yamaha Hatsudoki Kabushiki Kaisha. Auxiliary propelling equipment mounting structure for sail boats. 4,543,069, Cl. 440-112.000.

Kobayashi, Yoshikazu, to Nippon Columbia Kabushiki Kaisha. Recording apparatus. 4,543,617, Cl. 358-342.000.

Kobayashi, Yoshiyuki: *See*—
Aramaki, Minoru; Kobayashi, Yoshiyuki; Nakamura, Tamio; Nakano, Hisaji; and Suenaga, Takashi, 4,543,242, Cl. 423-406.000.

Kobori, Yasunori; Okamoto, Kaneyuki; Fukushima, Isao; Sekiya, Masataka; Nishijima, Hideo; Kano, Kenji; and Sakae, Tetsuo, to Hitachi, Ltd. Speed and phase control system. 4,543,516, Cl. 318-318.000.

Kochendorfer, Heinrich; Lodige, Heinrich; Mohaupt, Hubert; Schempp, Roland; Schumacher, Werner; and Skambraks, Raimund, to Robert Bosch GmbH. Control arrangement for hydraulic motor. 4,542,678, Cl. 91-6.000.

Kohjin Co., Ltd.: *See*—
Fujita, Yuji; Wakasugi, Keizo; and Kaneko, Ryoichi, 4,543,280, Cl. 428-35.000.

Koike, Hidemi: *See*—
Sakudo, Noriyuki; Abe, Katsunobu; Tokiguchi, Katsumi; Koike, Hidemi; and Okada, Osami, 4,543,465, Cl. 219-121.0PD.

Koike, Mikio: *See*—
Hanyu, Susumu; Hara, Kazumasa; and Koike, Mikio, 4,542,706, Cl. 112-229.000.

Kokrhanek, Vladimiro, to Industria & Moda di A. Pesek. Method and apparatus for decorating articles utilizing hot stamping presses. 4,542,691, Cl. 101-114.000.

Kollmorgen, Technologies Corporation: *See*—
Danz, George E.; and Shuler, C. Calvin, 4,543,520, Cl. 318-807.000.

Komatsu, Nobuhiro; Fujimoto, Minoru; Hirata, Kazuyuki; and Yamane, Makoto, to Mazda Motor Corporation. Front body construction for motor vehicle. 4,542,934, Cl. 296-194.000.

Komoto, Akira, to Shimadzu Corporation. Display device for use in an electronic balance. 4,542,799, Cl. 177-177.000.

Kondo, Tatsuhei; Takabe, Noboru; and Horiba, Takeshi, to Sanyo Machine Works, Ltd. Carcinostatic agent. 4,543,350, Cl. 514-18.000.

Konig, Hubert: *See*—
Muller, Anton; Konig, Hubert; and Wolfbeis, Ludwig, 4,542,779, Cl. 152-213.00A.

Konig, Johannes: *See*—
Reuter, Martin; and Konig, Johannes, 4,542,652, Cl. 73-597.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Hirabayashi, Shigeto; Masukawa, Toyoaki; Ishikawa, Wataru; and Harada, Tetsuya, 4,543,309, Cl. 430-31.000.
Iijima, Toshifumi; Nakagawa, Satoshi; and Menjo, Hiroshi, 4,543,323, Cl. 430-503.000.
Kamogawa, Ninichi; Ueno, Kenji; and Ishii, Kazumi, 4,542,977, Cl. 355-3.0CH.
Takagiwa, Hiroyuki; Matsuo, Syunji; and Tomono, Makoto, 4,543,311, Cl. 430-98.000.

Konrad, Eugen; Braun, Hans J.; Mager, Herbert; Noser, Friedrich; and Bracher, Max, to Wella AG. 1,3-Diamino-4-(2',2',2',-trifluoroethoxy)-benzene, method of producing the same, and hair coloring composition containing the same. 4,543,425, Cl. 564-442.000.

Konsihiroku Photo Industry Co., Ltd.: *See*—
Tarumi, Noriyoshi; Kimura, Kiyoshi; and Gunji, Kouichi, 4,542,978, Cl. 355-3.0TR.

Korb, Donald R.: *See*—
Gallop, Paul M.; and Korb, Donald R., 4,543,371, Cl. 523-106.000.

Korf Engineering GmbH: *See*—
Vuletic, Bogdan, 4,542,889, Cl. 266-137.000.
Vuletic, Bogdan, 4,543,123, Cl. 75-34.000.

Koshar, Robert J.: *See*—
Bany, Stephen W.; Koshar, Robert J.; and Williams, Todd R., 4,543,398, Cl. 525-474.000.

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Morishita, Mitsuharu; and Kouge, Shinichi, 4,543,521, Cl. 320-64.000.

Kovach, John P., to Del Norte Technology, Inc. Methods of and means for determining the time-center of pulses. 4,543,530, Cl. 328-108.000.

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Agrawal, Rakesh; and Kovak, Kenneth W., 4,543,115, Cl. 62-25.000.

Kozima, Yasuyuki; Sato, Kunio; Tadauchi, Masaharu; Suehiro, Hiroshi; and Inoue, Yasuo, to Hitachi, Ltd. Control circuit for matrix-driven recording. 4,543,644, Cl. 364-900.000.

Kraemer, Wieland: *See*—
Andersson, Mikael; Horlen, Per; and Kraemer, Wieland, 4,542,621, Cl. 60-39.050.

Kraftwerk Union Aktiengesellschaft: *See*—
Engelhardt, Reiner; and Wittchow, Eberhard, 4,543,110, Cl. 55-27.000.

Kramer, Steven R.: *See*—
Chao, Vivian W.; Kaufman, Frank B.; Kramer, Steven R.; and Lin, Burn J., 4,543,319, Cl. 430-312.000.

Kraushaar, Robert J., to ITT Corporation. Reflective Fabry-Perot interferometer. 4,542,988, Cl. 356-352.000.

Krauss, Werner; and Vogt, Heinrich, to Claudius Peters. Mixing silo for pneumatically homogenizing fine-grained or dust-like material. 4,542,991, Cl. 366-106.000.

Krawiec, Robert; and Menting, James E., to QO Chemicals, Inc. Fast curing furan foundry binder system containing a metal salt accelerator. 4,543,373, Cl. 523-144.000.

Kreutzig, Kirk. Color correction filter and method of taking underwater photographs therewith. 4,542,959, Cl. 350-311.000.

Kreyenhop, Manfred, to Klockner-Werke Aktiengesellschaft. Breakout warning method, utilizing acoustics, in a continuous casting installation and apparatus for its implementation. 4,542,781, Cl. 164-451.000.

Kristiansen, Arvid: *See*—
Pedersen, Narve S.; Persson, Wilfred L.; Hordvik, Jan; and Kristiansen, Arvid, 4,543,281, Cl. 428-36.000.

Kroener, Michael: *See*—
Brunnmueller, Fritz; and Kroener, Michael, 4,543,215, Cl. 260-465.50R.

Krulitsch, Dieter: *See*—
Hoffmann, Karl; Krulitsch, Dieter; and Schwartz, Helmut, 4,543,184, Cl. 210-193.000.

Kruse, William E. Pile having wedge former. 4,543,015, Cl. 405-256.000.

Kubik, Incorporated: *See*—
Poppelreiter, Joseph C., II, 4,543,517, Cl. 318-632.000.

Kuboshima, Yasuyuki, to Florex Co., Ltd. Container for instantaneous adhesive having means to protect bias spring. 4,543,005, Cl. 401-260.000.

Kubota Ltd.: *See*—
Matsuda, Yoshiaki; Oohashi, Yoshimitsu; Sanpei, Keiichi; and Nagamine, Yoshifumi, 4,543,079, Cl. 474-111.000.

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Kudelski, Stefan; Rosselet, Ernest; and Pertz, Eberhard, 4,542,663, Cl. 74-801.000.

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Kuder, Carl L.: *See*—
Smith, Daniel J.; Glasscock, Jessie F., Jr.; Poska, Richard P.; and Kuder, Carl L., 4,542,646, Cl. 73-78.000.

Kuepper, Daniel H.; and Allen, Peter J., to Kimberly-Clark Corporation. Process for making nested paper towels. 4,543,142, Cl. 156-209.000.

Kuhla, Donald E.; Campbell, Henry F.; and Studt, William L., to William H. Rorer, Inc. Naphthalene aminoalkylene ethers and thioethers, and their pharmaceutical uses. 4,543,352, Cl. 514-212.000.

Kuhn, Michael H.; Piotrowski, Herbert; and Geppert, Rudolf, to U.S. Philips Corporation. Method of and arrangement for controlling the gain of an amplifier. 4,543,537, Cl. 330-129.000.

Kulisek, Robert P., to Jarecki Industries. Ball valve. 4,542,878, Cl. 251-315.000.

Kumada, Masaharu; Tanabe, Hideo; Yuhara, Katsuo; Misumi, Akira; and Kawasaki, Hiroshi, to Hitachi, Ltd. Solar battery using amorphous silicon. 4,543,441, Cl. 136-249.000.

Kumano, Tomoji: *See*—
Tanaka, Osamu; Nakashima, Shozaburo; Nagano, Takashi; Kumano, Tomoji; and Hiromae, Yoshitaka, 4,543,134, Cl. 148-113.000.

Kumbier, Richard L.: *See*—
Brissette, Ronald N.; and Kumbier, Richard L., 4,542,996, Cl. 384-536.000.

Kumura, Haruyoshi: *See*—
Yamamuro, Sigeaki; Kumura, Haruyoshi; Tanaka, Yoshikazu; Abo, Keiju; and Hirano, Hiroyuki, 4,542,665, Cl. 74-866.000.

Kuntschik, Lawrence F.; and Dowe, Claudia L., to Texaco Inc. Water base hydraulic fluid. 4,543,199, Cl. 252-75.000.

Kurahayashi, Sadasuke, to Canon Kabushiki Kaisha. Method and an apparatus for image processing. 4,543,611, Cl. 358-260.000.

Kurata, Masami; and Inui, Toshiharu, to Fuji Xerox Co., Ltd. Thermal head driving system. 4,543,587, Cl. 346-76.0PH.

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Tateoka, Masamichi; Asano, Junichi; Kurata, Mitsuru; and Yokomizo, Yoshikazu, 4,543,491, Cl. 250-578.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Nakamura, Ken'ichi; Sakagami, Teruo; Teramoto, Yoshikichi; and Obara, Hiroshi, 4,543,293, Cl. 428-421.000.
Sakagami, Teruo; Arakawa, Noriyuki; and Kakutani, Haruko, 4,543,294, Cl. 428-422.000.

Kuribayashi, Isao; and Fukuda, Kunio, to Asahi-Dow Limited. Polyphenylene ether compositions. 4,543,391, Cl. 525-68.000.

Kurihara, Kiyoshi: *See*—
Shirata, Shigenobu; and Kurihara, Kiyoshi, 4,543,567, Cl. 340-519.000.

Kuroda, Kunishige, to Hitachi, Ltd. Superconducting wire and method of producing the same. 4,543,449, Cl. 174-126.00S.

Kuroda, Yoko: *See*—
Hoshino, Fumihiko; Yamaguchi, Takahiro; Abe, Nobuyuki; Watabe, Nobuyuki; Katzukura, Yoshiteru; Hoshino, Tadahiko; Utsumi, Yoko; and Kuroda, Yoko, 4,543,259, Cl. 424-116.000.

Kurosawa, Akihito; and Anazawa, Osamu, to Sanden Corporation. Dispensing mechanism for vending machines. 4,542,834, Cl. 221-116.000.

Kurosu, Masaaki; Nakayama, Takeshi; Nakajima, Akira; and Ohshima, Yoshimitsu, to Hitachi, Ltd. Japanese text inputting system having interactive mneumonic mode and display choice mode. 4,543,631, Cl. 364-200.000.

Kurt H. Volk, Inc.: *See*—
Stenner, John W., 4,543,082, Cl. 493-216.000

Kuwahara, Hiroshi: *See*—
Amada, Eiichi; Kuwahara, Hiroshi; Shirasu, Hirotoshi; Suzuki, Taihei; and Morita, Takashi, 4,543,652, Cl. 370-66.000.

Kuwano, Yukinori: *See*—
Yamano, Masaru; Nagaoka, Isao; Kuwano, Yukinori; Kawada, Hiroshi; and Sakai, Souichi, 4,542,578, Cl. 29-572.000.

Kuzanian, Armen S.: *See*—
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Kyner, Paul R., Jr. Portable shelter. 4,542,759, Cl. 135-102.000.

Kyogoku, Hiroshi: *See*—
Tazaki, Shigemitsu; and Kyogoku, Hiroshi, 4,543,590, Cl. 346-140.00R.

La Crosse, Frank X.; and Greiner, Waldemar H. Duct jointing system. 4,542,923, Cl. 285-424.000.

Ladouceur, Lawrence C., to Rockwell International Corporation. Method of preventing wheel cover insert rotation. 4,542,569, Cl. 29-159.00A.

Lafon, Guy. Portable machine designed for the automatic installation of wire ties on concrete reinforcing steel frames and operation thereof. 4,542,773, Cl. 140-93.600.

Lair, George J. Method for loading cargo. 4,543,035, Cl. 414-786.000.

Lamarche, Jean L.: *See*—
Buck, Robert; and Lamarche, Jean L., 4,543,497, Cl. 307-308.000.

Lamb-Weston, Inc.: *See*—
Livermore, Richard S., 4,542,821, Cl. 198-822.000.

Land O'Lakes, Inc.: *See*—
Stahel, Nancy G., 4,543,264, Cl. 426-629.000.

Langdon, Paul J.: *See*—
French, Pierre B.; and Langdon, Paul J., 4,543,041, Cl. 416-183.000.

Lange, Heinz. Windmill rotor. 4,543,042, Cl. 416-197.00A.

Langel, Rolf: *See*—
Thoma, Wilhelm; Nachtkamp, Klaus; Schroer, Walter; and Langel, Rolf, 4,543,144, Cl. 156-230.000.

Laor, Herzl. Piezoelectric apparatus for positioning optical fibers. 4,543,663, Cl. 455-600.000.

Lare, Paul J.: *See*—
Rowe, Russell H., Jr.; Lare, Paul J.; and Hahn, Henry, 4,542,539, Cl. 623-16.000.

Large, Jean-Francois: *See*—
Dreuilhe, Jacques; Puff, Roger; Kita, Jean-Claude; and Large, Jean-Francois, 4,542,716, Cl. 122-4.00D.

Larkey, John T.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,543,156, Cl. 162-101.000.

Larson, David L., to Dow Chemical Company, The. Liquid phase preparation of 2-substituted-2-oxazolines with cadmium salt catalysts. 4,543,414, Cl. 548-239.000.

Larson, Edwin L. Pipe-thread sealing tape reel with tape retarding element. 4,542,863, Cl. 242-96.000.

Larson, Wayne K.: *See*—
Lorenz, William J.; and Larson, Wayne K., 4,543,315, Cl. 430-156.000.

Lary, Richard F.: *See*—
Bean, Robert; Gardner, Edward A.; Chow, Michael; Rubinson, Barry L.; Lary, Richard F.; and Blackledge, Robert, 4,543,626, Cl. 364-200.000.

Lash, Ronald J., to OMI International Corporation. Zinc-alloy electrolyte and process. 4,543,166, Cl. 204-44.200.

Laures, Pierre, to Societe Nationale Industrielle et Aerospatiale. Reconnaissance system comprising an air-borne vehicle rotating about its longitudinal axis. 4,543,603, Cl. 358-109.000.

Layher, Eberhard. Method of and arrangement for determining loading capacity of coating elements for structures. 4,543,126, Cl. 73-852.000.

Lear Siegler, Inc.: *See*—
Leemkuil, Hendrik, 4,542,815, Cl. 193-35.00A.

LeBouef, Ralph J., Jr.: *See*—
Gettleman, Lawrence; Farris, Charles L.; Rawls, H. Ralph; and LeBouef, Ralph J., Jr., 4,543,379, Cl. 523-120.000.

Le Bris, Raymond: *See*—
Guillou, Louis C.; Le Bris, Raymond; and Le Rest, Ambroise, 4,543,559, Cl. 340-347.0DD.

Lectrolarm Custom Systems, Inc.: *See*—
Smith, William V., 4,543,609, Cl. 358-210.000.

Ledeem Flow Control Systems, Inc.: *See*—
Ledeen, Howard L.; and Mittal, Chander P., 4,542,814, Cl. 192-0.098.

Ledeen, Howard L.; and Mittal, Chander P., to Ledeem Flow Control Systems, Inc. System for precise valve control. 4,542,814, Cl. 192-0.098.

LeDu, Bertrand: *See*—
Huignard, Jean Pierre; and LeDu, Bertrand, 4,543,662, Cl. 455-600.000.

Lee, Joseph Y.: *See*—
D'Agostino, Vincent F.; Lee, Joseph Y.; Zapisek, Stephen; and Schore, George, 4,543,169, Cl. 204-105.00R.

Lee, Richard J. Cartridge primer feeder. 4,542,677, Cl. 86-38.000.

Lee, Robert L. Dental apparatus and method of use. 4,543,062, Cl. 433-71.000.

Leemkuil, Hendrik, to Lear Siegler, Inc. Air brake and retarder for gravity conveyors. 4,542,815, Cl. 193-35.00A.

Leer, Stuart D., to General Electric Company. Collapsible magnetic antenna mount. 4,543,584, Cl. 343-881.000.

Lehrer, Robert I.; and Selsted, Michael E., to University of California, The Regents of the. Cationic oligopeptides having microbicidal activity. 4,543,252, Cl. 514-12.000.

Leinkram, Charles Z.: *See*—
Alcorn, George E.; Leinkram, Charles Z.; and Okunola, Olatunji, 4,543,442, Cl. 136-255.000.

LeMay, Dan B.: *See*—
Renken, Wayne G.; and LeMay, Dan B., 4,542,650, Cl. 73-204.000.

Lemkey, Franklin D.; and Machlin, Irving, to United Technologies Corporation. Eutectic superalloy compositions and articles. 4,543,235, Cl. 420-443.000.

Lenco, Inc.: *See*—
Fay, Richard D., 4,543,538, Cl. 330-260.000.

Lensky, Albert: *See*—
Olesen, Paul; Lensky, Albert; and Pendzich, Richard J., 4,542,844, Cl. 227-7.000.

Lenz, Helmut: *See*—
Albert, Winfried; Ziegenhorn, Joachim; Siedel, Joachim; Batz, Hans-Georg; Lenz, Helmut; and Pautz, Brigitte, 4,543,325, Cl. 435-7.000.

Le Rest, Ambroise: *See*—
Guillou, Louis C.; Le Bris, Raymond; and Le Rest, Ambroise, 4,543,559, Cl. 340-347.0DD.

L'Etat Francais: *See*—
Picquendar, Jean-Edgar; Henaff, Jeannine; and Feldmann, Michel, 4,543,547, Cl. 333-193.000.

Leverett, Theodore W.; and Musits, Bela, to International Business Machines Corporation. Robot manipulator with automatically changeable finger tools. 4,543,032, Cl. 414-730.000.

Levine, Edward H.; and Newbold, F. E. Dixon, to Rhode Gear USA. Bicycle handlebar mounted carrier bag. 4,542,839, Cl. 224-36.000.

Levine, Morris M., to CIC Int'l. Corp. Wet-dry vacuum cleaner. 4,542,557, Cl. 15-344.000.

Levitt, George; and Wolf, Anthony D., to Du Pont de Nemours, E. I., and Company. Alkyl sulfonyl sulfonamides. 4,543,120, Cl. 71-93.000.

Levonius, Michael R.: *See*—
Subsara, William P.; and Levonius, Michael R., 4,543,175, Cl. 204-400.000.

Leyte-Vidal, Marco A. Precast concrete building panel and method of producing the same. 4,542,613, Cl. 52-375.000.

Li, Tsung-Tee: *See*—
Muchowski, Joseph M.; Greenhouse, Robert; Ackrell, Jack; Li, Tsung-Tee; and Pfister, Jurg R., 4,543,361, Cl. 514-422.000.

Liao, Chien W.: *See*—
Weidner, Ralph F.; Regutti, Carl W.; and Liao, Chien W., 4,543,121, Cl. 75-5.000.

Libbey-Owens-Ford Company: *See*—
Curtze, Edward W.; and Herliczek, Siegfried H., 4,543,283, Cl. 428-38.000.

Licciardello, Michael; and Boden, Richard M., to International Flavors & Fragrances Inc. 2-Isopropenyl-1,5-dimethyl-cyclopentane carboxaldehyde. 4,543,203, Cl. 252-522.00R.

Liebke, William R.: *See*—
Greene, Walter; and Liebke, William R., 4,542,622, Cl. 60-39.230.

Liermann, Peter, to WABCO Fahrzeugbremsen GmbH. Electric circuit for remotely controlling a selected one of a plurality of magnet valves. 4,543,575, Cl. 340-825.570.

Lin, Burn J.: *See*—
Chao, Vivian W.; Kaufman, Frank B.; Kramer, Steven R.; and Lin, Burn J., 4,543,319, Cl. 430-312.000.

Lindberg, Charles A.; Maclay, William R.; and Merritt, Lauren V., to Datacopy Corporation. Spiral track disk drive. 4,543,621, Cl. 360-77.000.

Lindemann Maschinenfabrik GmbH: *See*—
Adolph, Manfred, 4,542,856, Cl. 241-69.000.

Lindenthal, Hans, to J. M. Voith GmbH. Clutch for rigidly connecting coaxial parts of construction, especially for Cardan shafts. 4,543,011, Cl. 403-338.000.

Linder, Ernst: *See*—
Britsch, Heinz; Klenk, Martin; Linder, Ernst; and Moser, Winfried, 4,542,727, Cl. 123-435.000.

Linder, William J., to Honeywell Inc. Phase locked loop with limited phase correction when in locked condition. 4,543,540, Cl. 331-1.00A.

Lindgren, Douglas L.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,543,156, Cl. 162-101.000.

Lindmark, Richard C., Jr.: *See*—
Bunnelle, William L.; and Lindmark, Richard C., Jr., 4,543,099, Cl. 604-385.00A.

Lindner, Horst: *See*—
Heck, Klaus; and Lindner, Horst, 4,543,170, Cl. 204-129.200.

Lindstrom, Robert O., to SCM Corporation. Display carton. 4,542,847, Cl. 229-16.00D.

Linlor, William I., to United States of America, National Aeronautics and Space Administration. Optical system with reflective baffles. 4,542,963, Cl. 350-537.000.

Littelfuse, Inc.: *See*—
Schaefer, Rudolf K., 4,543,557, Cl. 337-196.000.

Littlehale, Bradner M. Automatic liquid delivery apparatus. 4,542,762, Cl. 137-78.300.

Littwin, Kenneth M.; and Buky, Gabriel R., to Electro-Matic Products Co. TV camera cart. 4,542,909, Cl. 280-79.10A.

Liu, Kou-Chang, to GAF Corporation. Herbicidal compounds. 4,543,426, Cl. 564-442.000.

Liu, Ren-Young, to Advanced Technology Laboratories, Inc. Apparatus and method for beamforming in an ultrasonic transducer array. 4,542,653, Cl. 73-626.000.

Livermore, Richard S., to Lamb-Weston, Inc. Hump back conveyor. 4,542,821, Cl. 198-822.000.

Lloyd, Harry J., Jr.; Huggins, Hoyt W.; Lyon, Michael R.; Thayer, David N.; and McGovney, William E., to House of Lloyd, Inc. Order filling system. 4,542,808, Cl. 186-56.000.

Loch, Werner: *See*—
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,543,376, Cl. 523-414.000.

Lockheed Corporation: *See*—
Boyd, James A., 4,542,868, Cl. 244-198.000.

Loctite (Ireland) Ltd.: *See*—
Woods, John; Rooney, John M.; and Harris, Stephen J., 4,543,397, Cl. 525-455.000.

Lodige, Heinrich: *See*—
Kochendorfer, Heinrich; Lodige, Heinrich; Mohaupt, Hubert; Schempp, Roland; Schumacher, Werner; and Skambraks, Raimund, 4,542,678, Cl. 91-6.000.

Lombard, Claude; and Morvan, Olivier, to Regie Nationale des Usines Renault. Welding and fluid tightness process for the production of sensors. 4,543,116, Cl. 65-40.000.

Loomis, Gary L., to Du Pont de Nemours, E. I., and Company. Curable composition comprising elastomeric terpolymer of carbon monoxide. 4,543,440, Cl. 525-539.000.

Lorenz, William J.; and Larson, Wayne K., to Minnesota Mining and Manufacturing Company. Storage-stable photosensitive composition and article with adduct of diazo resin and amorphous sulfopolyester. 4,543,315, Cl. 430-156.000.

Lork, Winfried: *See*—
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, 4,543,217, Cl. 260-544.00A.

Lossa, Ulrich, to Palitex Project-Company GmbH. Thread pull-off aid of variable geometrical configuration for the overhead drawing-off of a thread from a creel bobbin. 4,542,618, Cl. 57-58.830.

Loucansky, Stanislav: *See*—
Kase, Oldrich; and Loucansky, Stanislav, 4,542,620, Cl. 57-302.000.

Low, Teresa L. K.: *See*—
Goldstein, Allan L.; Low, Teresa L. K.; McClure, John; and Naylor, Paul H., 4,543,340, Cl. 436-542.000.

Lowery, Jack R., Sr.: *See*—
Payet, George L.; Hendrix, James E.; and Lowery, Jack R., Sr., 4,542,771, Cl. 139-302.000.

Luchterhand, Heinz: *See*—
Hammer, Klaus-Dieter; Winter, Hermann; Kindl, Erwin; and Luchterhand, Heinz, 4,543,282, Cl. 428-36.000.

Lucic, Ivan: *See*—
Zurinski, Viktor; Lucic, Ivan; and Barthelmes, Karlheinz, 4,542,747, Cl. 128-660.000.

Luco-Technic GmbH Verfahrenstechnische Anlagen: *See*—
Grun, Gustav; and Borgner, Klaus, 4,543,029, Cl. 414-412.000.

Luebrecht, Donald; and Thobe, Nicholas D., to Crown Controls Corporation. Apparatus for sideshift carriage control. 4,543,031, Cl. 414-631.000.

Lundberg, Robert D.: *See*—
Agarwal, Pawan K.; Duvdevani, Ilan; and Lundberg, Robert D., 4,543,385, Cl. 524-518.000.

Lundin, Lars, to Oy Lars Ludin Patent Ab. Device for cleaning a collecting rope from oil or similar material. 4,542,555, Cl. 15-256.600.

Lyndhurst, Francis R., to Scat Enterprises, Inc. Air-cooled reciprocating internal combustion engine with removable individual heads for multiple cylinders. 4,542,720, Cl. 123-90.380.

Lyon, Michael R.: *See*—
Lloyd, Harry J., Jr.; Huggins, Hoyt W.; Lyon, Michael R.; Thayer, David N.; and McGovney, William E., 4,542,808, Cl. 186-56.000.

Lyons, Bernard J.: *See*—
Horsma, David A.; Lyons, Bernard J.; and Smith-Johannsen, Robert, 4,543,474, Cl. 219-553.000.

Lyons, Michael D., to American Standard Inc. Multiple disk brake control. 4,542,944, Cl. 303-6.00R.

M&T Chemicals Inc.: *See*—
Seyb, Edgar J., Jr.; and Brown, Laurence A., 4,543,167, Cl. 204-51.000.

Mabuchi, Naoki: *See*—
Iwamoto, Kazumasa; Mabuchi, Naoki; and Kawano, Junji, 4,542,953, Cl. 339-198.0GA.

MacGregor, David C.: *See*—
DeHaan, Abel; and MacGregor, David C., 4,542,752, Cl. 128-784.000.

Machlin, Irving: *See*—
Lemkey, Franklin D.; and Machlin, Irving, 4,543,235, Cl. 420-443.000.

Maclay, William R.: *See*—
Lindberg, Charles A.; Maclay, William R.; and Merritt, Lauren V., 4,543,621, Cl. 360-77.000.

Madigan, James A., to Reed Rock Bit Company. Nozzle assembly for an earth boring drill bit. 4,542,798, Cl. 175-340.000.

Maebayashi, Jiro: *See*—
Kijima, Takao; and Maebayashi, Jiro, 4,542,920, Cl. 280-701.000.

Maeda, Hiroshi: *See*—
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,543,334, Cl. 435-253.000.

Maeda, Ken-ichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Pattern features extracting apparatus and method. 4,543,660, Cl. 382-34.000.

Maeda, Minoru; Iwasaki, Masayuki; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Photopolymerizable composition containing heterocyclic additives. 4,543,318, Cl. 430-288.000.

Mager, Herbert: *See*—
Konrad, Eugen; Braun, Hans J.; Mager, Herbert; Noser, Friedrich; and Bracher, Max, 4,543,425, Cl. 564-442.000.

Magnavox Government and Industrial Electronics Company: *See*—
Hariharan, Peruvamba R., 4,543,546, Cl. 333-173.000.

Magune Co., Ltd.: *See*—
Karasawa, Tadayoshi; Kawano, Katsumi; Uchiyama, Katsuji; and Yamazaki, Michio, 4,543,197, Cl. 252-62.560.

Mahabadi, Hadi-Khan; and Alexandru, Lupu, to Xerox Corporation. Toner compositions containing thermotropic liquid crystalline polymers. 4,543,313, Cl. 430-109.000.

Mahoney, Robert D.: *See*—
Chen, David T.; and Mahoney, Robert D., 4,543,221, Cl. 264-41.000.

Maier, Wilfried: *See*—
Zitz, Alfred; Wrulich, Herwig; Schetina, Otto; and Maier, Wilfried, 4,542,942, Cl. 299-81.000.

Maillefer, Charles E., to Maillefer S.A. Sizing device for extruded plastic tubing. 4,543,051, Cl. 425-71.000.

Maillefer S.A.: *See*—
Maillefer, Charles E., 4,543,051, Cl. 425-71.000.

Mal, Dipakranjan: *See*—
Hauser, Frank M.; and Mal, Dipakranjan, 4,543,428, Cl. 568-345.000.

Malachowski, Frank, to Alcan Aluminum Corporation. Structural members with interlocked components. 4,542,614, Cl. 52-586.000.

Maldonado, Paul: *See*—
Grangette, Henri; Constans, Bernard; and Maldonado, Paul, 4,543,195, Cl. 252-33.400.

Mancinelli, Paul A., to Atlantic Richfield Company. Terminally functional polymers. 4,543,395, Cl. 525-332.400.

Mandai, Harufumi; and Tomono, Kunisaburo, to Murata Manufacturing Co., Ltd. Chip-type inductor. 4,543,553, Cl. 336-83.000.

Maneke, Siegfried: *See*—
Feldkamper, Richard; Maneke, Siegfried; and Philipp, Bernhard, 4,542,894, Cl. 271-11.000.

Manges, David R., to United States of America, National Aeronautics and Space Administration. Rotatable electric cable connecting system. 4,542,858, Cl. 242-54.00R.

Marazzini, Severino, to PAMA S.p.A. Method to form soles with a heel and an under-heel, mainly for women footwear, with an incorporated supporting core, or reinforcement, and shaped and reinforced soles obtained by said method. 4,542,548, Cl. 12-142.00J.

Marbor Engineering Associates: *See*—
Stein, Marcel, 4,542,879, Cl. 251-360.000.

Marchetti, Augusto. Taping machine with conveying units at adjustable distance. 4,543,150, Cl. 156-468.000.

Marconi Avionics Limited: *See*—
Taylor, Douglas R.; and Pearce, David W., 4,543,556, Cl. 336-210.000.

Marconi Instruments Limited: *See*—
Owen, David P., 4,543,495, Cl. 307-257.000.
Owen, David P., 4,543,542, Cl. 332-18.000.

Marginger, Melvin F.: *See—*
Barlow, Anthony; and Marginger, Melvin F., 4,543,381, Cl. 524-188.000.

Marhofer, Gerd: *See—*
Buck, Robert; Marhofer, Gerd; and Gesthuysen, Hans-Dieter, 4,543,566, Cl. 340-512.000.

Marinack, Robert J.: *See—*
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,543,156, Cl. 162-101.000.

Marino, Jerry C.; and Desilets, David E., to Prime Computer, Inc. Terminal with tilt-swivel display. 4,542,872, Cl. 248-183.000.

Markhart, Gary T., to USM Corporation. Continuous mixer. 4,542,992, Cl. 366-300.000.

Marlorny, Bertold: *See—*
Hopp, Werner; and Marlorny, Bertold, 4,542,572, Cl. 29-281.500.

Marosi, Laszlo: *See—*
Hartig, Juergen; Stoessel, Armin; Herrmann, Guenter; and Marosi, Laszlo, 4,543,427, Cl. 568-342.000.

Marten, Edward N., to H. B. Zachry Co. Method and apparatus for cutting a trench through rock-like material. 4,542,940, Cl. 299-1.000.

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Martin, Kenneth W.: *See—*
Temes, Gabor C.; and Martin, Kenneth W., 4,543,534, Cl. 330-9.000.

Martini, Helmut: *See—*
Bressert, Edgar; Gulich, Gerhard; Martini, Helmut; Meny, Rudi; Sauer, Roland; and Wohr, Rolf, 4,543,570, Cl. 340-589.000.

Maruyama, Yutaka: *See—*
Nakao, Toru; Ikebe, Tsuguo; Tahara, Tetsuya; Maruyama, Yutaka; and Yaoka, Osamu, 4,543,354, Cl. 514-238.000.

Massachusetts Institute of Technology: *See—*
Barringer, Eric A.; Fegley, M. Bruce, Jr.; and Bowen, H. Kent, 4,543,341, Cl. 501-1.000.
Frackelton, A. Raymond, Jr.; Eisen, Herman N.; and Ross, Alonzo H., 4,543,439, Cl. 935-92.000.

Massey-Ferguson Industries Limited: *See—*
Bagnall, Ralph S.; and Helm, William N., 4,542,785, Cl. 165-95.000.

Massino, Chester F., to Ideas That Sell, Inc. Soccer ball and method of making same. 4,542,902, Cl. 273-65.00A.

Masukawa, Toyoaki: *See—*
Hirabayashi, Shigeto; Masukawa, Toyoaki; Ishikawa, Wataru; and Harada, Tetsuya, 4,543,309, Cl. 430-31.000.

Matherly, James F.; and Southard, Benny S. Bow holder. 4,542,873, Cl. 248-218.400.

Mathis, Cleo D. Whirlpool jets. 4,542,854, Cl. 239-587.000.

Mathis, Logan H.: *See—*
Thornton, Douglas M.; and Mathis, Logan H., 4,542,767, Cl. 137-596.160.

Mathis, Ronald D.: *See—*
Reed, Jerry O.; and Mathis, Ronald D., 4,543,224, Cl. 264-211.000.

Matisa Materiel Industriel S.A.: *See—*
Cicin-Sain, Ivo, 4,542,697, Cl. 104-2.000.

Matsuda, Takashi, to Takara Co., Ltd. Self-propelled reconfigurable running toy. 4,543,073, Cl. 446-230.000.

Matsuda, Yoshiaki; Oohashi, Yoshimitsu; Sanpei, Keiichi; and Nagamine, Yoshifumi, to Kubota Ltd. Device for automatically adjusting tension of endless running member in wrapping connector driving. 4,543,079, Cl. 474-111.000.

Matsui, Minoru; and Takahashi, Tomonori, to NGK Insulators, Ltd. Polycrystalline transparent spinel sintered body and method of producing the same. 4,543,346, Cl. 501-120.000.

Matsui, Shigetomo; Atsuta, Toshio; and Toma, Shouji, to Kawasaki Jukogyo Kabushiki Kaisha. Method of producing a multiple-wall pipe structure with anticorrosion end protection. 4,542,846, Cl. 228-112.000.

Matsumoto, Motoki: *See—*
Nakamura, Kazuharu; Matsumoto, Motoki; and Yoshino, Tooru, 4,543,057, Cl. 431-208.000.

Matsumura, Yasuhide: *See—*
Sato, Kazuo; Yamaguchi, Sumio; Kato, Shigeo; Matsumura, Yasuhide; Mizumoto, Muneo; Okuno, Sumio; and Tamura, Naoyuki, 4,542,712, Cl. 118-726.000.

Matsunaga, Shigeo; Iizuka, Yoshio; and Suzuki, Tadaaki, to Fujitsu Limited. Facsimile system. 4,543,612, Cl. 358-261.000.

Matsunaga, Yoshiyuki: *See—*
Harada, Nozomu; Endo, Yukio; Yoshida, Okio; and Matsunaga, Yoshiyuki, 4,543,489, Cl. 250-578.000.

Matsuo, Seitaro; Kiuchi, Mikiho; and Sekimoto, Misao, to Nippon Telegraph & Telephone Public Corporation. Method of fabricating a membrane structure. 4,543,266, Cl. 427-38.000.

Matsuo, Seitaro: *See—*
Itsumi, Manabu; Ehara, Kohei; Muramoto, Susumu; and Matsuo, Seitaro, 4,543,592, Cl. 357-43.000.

Matsuo, Syunji: *See—*
Takagiwa, Hiroyuki; Matsuo, Syunji; and Tomono, Makoto, 4,543,311, Cl. 430-98.000.

Matsuoka, Takeji, to MEC Machinery Co., Ltd. Apparatus for manufacturing solid tension coil springs having attachment loops at both ends thereof. 4,542,635, Cl. 72-14.000.

Matsushima, Keiichi, to Aimor Denshi Kabushiki Kaisha. Method of and apparatus for printing colored patterns. 4,542,997, Cl. 400-120.000.

Matsushita Electric Works, Ltd.: *See—*
Ito, Kenzo; and Mizobata, Shiro, 4,542,585, Cl. 30-210.000.
Sauer, Hans, 4,543,550, Cl. 335-78.000.

Matsuura, Takanobu, to Alps Electric Co., Ltd. Mechanism for driving a pen recorder. 4,543,585, Cl. 346-49.000.

Maxner, Richard B., to USM Corporation. Conveyor for a substrate. 4,542,820, Cl. 198-817.000.

Maxwell, Kenneth H., deceased (by Maxwell, Shelagh M., executor), to Xerox Corporation. Process for preparing electrostatographic photosensitive device comprising sodium additives and trigonal selenium particles. 4,543,314, Cl. 430-134.000.

Maxwell, Shelagh M., executor: *See—*
Maxwell, Kenneth H., deceased, 4,543,314, Cl. 430-134.000.

Mayer, Norbert: *See—*
Hieber, Konrad; and Mayer, Norbert, 4,543,576, Cl. 340-870.170.

Mazda Motor Corporation: *See—*
Kijima, Takao; and Maebayashi, Jiro, 4,542,920, Cl. 280-701.000.
Komatsu, Nobuhiro; Fujimoto, Minoru; Hirata, Kazuyuki; and Yamane, Makoto, 4,542,934, Cl. 296-194.000.

McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, to Texas Instruments Incorporated. High performance dynamic sense amplifier voltage boost for row address lines. 4,543,500, Cl. 307-530.000.

McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, to Texas Instruments Incorporated. High performance dynamic sense amplifier with dual channel grounding transistor. 4,543,501, Cl. 307-530.000.

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Briggs, Peter J.; McAloon, Kevin; and Rideal, Graham R., 4,543,287, Cl. 428-288.000.

McArdle, Francis H.; and Schneider, Earl, to Boeing Company, The. Method of fabricating a helicopter rotor hub. 4,542,567, Cl. 29-156.80R.

McArdle, Francis H.; and Schneider, Earl, to Boeing Company, The. Helicopter rotor system. 4,543,040, Cl. 416-134.00A.

McCall, Francis L., to Specified Ceiling Systems. Drop ceiling framework. 4,542,615, Cl. 52-729.000.

McClure, John: *See—*
Goldstein, Allan L.; Low, Teresa L. K.; McClure, John; and Naylor, Paul H., 4,543,340, Cl. 436-542.000.

McCormick, Samuel L.: *See—*
Bollinger, David E.; and McCormick, Samuel L., 4,543,138, Cl. 156-69.000.

McCoy, William C. Steerable and aimable catheter. 4,543,090, Cl. 604-95.000.

McCrickerd, John T., to Newport Corporation. Fiber optics transfer systems. 4,542,956, Cl. 350-96.200.

McDermott, Arthur W., to Boeing Company, The. Coil assembly for hot melt induction heater apparatus. 4,543,555, Cl. 336-206.000.

McDonnell Douglas Corporation: *See—*
Brine, Gerald T., 4,542,869, Cl. 244-216.000.

McElroy, James F.: *See—*
Dantowitz, Philip; Balko, Edward N.; and McElroy, James F., 4,543,303, Cl. 429-34.000.

McGinnis, Vincent D.: *See—*
Rodgers, Stephen D.; Dick, Richard J.; and McGinnis, Vincent D., 4,543,418, Cl. 549-562.000.

McGovney, William E.: *See—*
Lloyd, Harry J., Jr.; Huggins, Hoyt W.; Lyon, Michael R.; Thayer, David N.; and McGovney, William E., 4,542,808, Cl. 186-56.000.

McGraw-Edison Company: *See—*
Phillips, Paul E., 4,542,551, Cl. 15-49.00R.

McGregor, Rob R.: *See—*
Misevich, Kenneth W.; Cross, Henry D., III; Dube, Roland E.; and McGregor, Rob R., 4,542,598, Cl. 36-114.000.

McGuire, Samuel B., to Bending Products, Inc. Tube bending mandrel. 4,542,637, Cl. 72-466.000.

McHaney, Stephen C.: *See—*
Henery, James D.; McHaney, Stephen C.; and Edwards, Charles L., 4,543,437, Cl. 585-857.000.
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McIlrath, Donald H.: *See—*
Padget, John C.; and McIlrath, Donald H., 4,543,386, Cl. 524-523.000.
Padget, John C.; and McIlrath, Donald H., 4,543,387, Cl. 524-523.000.

McKeough, David T.: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,543,405, Cl. 528-78.000.

McLaughlin, Hugh R. Apparatus for removing water from the ground. 4,542,594, Cl. 34-71.000.

McNennamy, John A.: *See—*
Charbonneau, Arthur G.; Godfrey, Dwaine A.; McNennamy, John A.; and Nafziger, Steven, 4,542,649, Cl. 73-168.000.

Meador, Jacqueline C.: *See—*
Betts, Robert E.; Crawford, John F.; and Meador, Jacqueline C., 4,542,695, Cl. 102-378.000.

MEC Machinery Co., Ltd.: *See—*
Matsuoka, Takeji, 4,542,635, Cl. 72-14.000.

Mee, Gary L.; and Willcott, M. Robert, to NMR Imaging, Inc. Method of tuning an NMR apparatus. 4,543,529, Cl. 324-313.000.

Mehler, Doron; and Otten, Brigitte. Catheter set. 4,543,092, Cl. 604-164.000.

Mehta, Avinash C.; and Taylor, Lloyd D., to Polaroid Corporation. Photographic system with salt of phenylmercaptoazole and quaternary radical. 4,543,317, Cl. 430-219.000.

Melamed, Nathan T., to Westinghouse Electric Corp. Conductive polymers. 4,543,296, Cl. 428-522.000.

Melling, Elmer M.: *See—*
Johnson, Robert M.; and Melling, Elmer M., 4,543,159, Cl. 162-164.100.

Melton, Donald L.; and Thomas, William L., III. Exercise cycle with interactive amusement device. 4,542,897, Cl. 272-73.000.

Meltzer, Leonard A.; and Sutkin, Seymour, to United Technologies Corporation. Multiple channel rotary joint. 4,543,549, Cl. 333-256.000.

Memmen, Robert L., to United Technologies Corporation. Internally cooled hollow airfoil. 4,542,867, Cl. 244-117.00A.

Menjo, Hiroshi: *See—*
Iijima, Toshifumi; Nakagawa, Satoshi; and Menjo, Hiroshi, 4,543,323, Cl. 430-503.000.

Menke, W. Kenneth; and Jincks, Danny C., to Public Safety Equipment, Inc. Light bar for emergency vehicles. 4,543,622, Cl. 362-219.000.

Menting, James E., to QO Chemicals, Inc. Furan foundry binder system containing a curing promoter. 4,543,374, Cl. 523-144.000.

Menting, James E.: *See—*
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Meny, Rudi: *See—*
Bressert, Edgar; Gulich, Gerhard; Martini, Helmut; Meny, Rudi; Sauer, Roland; and Wohr, Rolf, 4,543,570, Cl. 340-589.000.

Merck & Co., Inc.: *See—*
Cama, Lovji D.; and Christensen, Burton G., 4,543,257, Cl. 514-210.000.
Ponticello, Gerald S., 4,543,415, Cl. 548-436.000.

Merritt, Lauren V.: *See—*
Lindberg, Charles A.; Maclay, William R.; and Merritt, Lauren V., 4,543,621, Cl. 360-77.000.

Messina, Michele, to Schiapparelli Farmaceutici S.p.A. Spironolactone containing composition for combatting acne. 4,543,351, Cl. 514-175.000.

Metal Box P.L.C.: *See—*
Rayner, Adrien P., 4,542,837, Cl. 222-402.110.

Metro Hoist & Body Co., Inc.: *See—*
Petretti, Anthony V., 4,543,183, Cl. 210-187.000.

Meyer, Gerhard: *See—*
Diamantoglou, Michael; Brandner, Alexander; and Meyer, Gerhard, 4,543,409, Cl. 536-68.000.

Meyerand, Russell G., Jr.; and Smith, David C., to United Technologies Corporation. Laser particle removal. 4,543,484, Cl. 250-423.00P.

MG2 S.p.A.: *See—*
Gamberini, Ernesto, 4,542,835, Cl. 222-1.000.

Michnowski, Jane, to Nabisco Brands, Inc. Process for making a nutritional bar. 4,543,262, Cl. 426-306.000.

Micro Spray (Australia) Pty. Ltd.: *See—*
Stacey, Robert E., 4,542,855, Cl. 239-690.000.

Middleton, Thomas R., to GTE Laboratories Incorporated. Method of friction welding a lamp feedthrough assembly. 4,542,843, Cl. 228-112.000.

Midland-Ross Corporation: *See—*
Flor, Joseph R.; Havens, Richard F.; and Panayoti, Peter, 4,542,947, Cl. 339-54.000.

Mignani, Gerard; and Morel, Didier, to Rhone-Poulenc Sante. Tetraene, its preparation and its use. 4,543,433, Cl. 585-16.000.

Migowski, Gunter. Toy with parachute. 4,543,072, Cl. 446-54.000.

Miida, Hiroshi: *See—*
Chiba, Ko; Wada, Yoshiaki; Miida, Hiroshi; and Ono, Sumio, 4,542,907, Cl. 277-140.000.

Mikyska, Glenn E.: *See—*
Stanley, William W.; and Mikyska, Glenn E., 4,543,493, Cl. 307-126.000.

Milam, David W. Mine ventilation line curtain extender. 4,542,681, Cl. 98-50.000.

Miles Laboratories, Inc.: *See—*
Chen, Shuenn-tzong, 4,543,338, Cl. 436-170.000.
Corey, Paul F.; and Kluender, Harold C., 4,543,421, Cl. 560-106.000.
Jao, Yun C.; and Good, Ivan C., 4,543,332, Cl. 435-180.000.
Mitra, Gautam; and Ng, Paul K., 4,543,210, Cl. 260-112.00B.
Sommer, Ronald G.; and Greenquist, Alfred C., 4,543,335, Cl. 436-69.000.
White, James A., 4,543,558, Cl. 340-347.0AD.

Milton Roy Company: *See—*
Bingler, Douglas J., 4,543,228, Cl. 264-275.000.

Mims, Donald S.; and Frazier, Terry L., to Texaco Inc. Method of measuring quality of steam in a flow fine. 4,542,993, Cl. 374-42.000.

Mimura, Tomonori; Sagusa, Hisayuki; Satou, Takehide; and Takahashi, Katsuaki, to Hitachi, Ltd. Sampling apparatus. 4,543,238, Cl. 422-63.000.

Minagawa, Shoichi; and Okamoto, Takeshi, to Clarion Co., Ltd. Parametric amplifier. 4,543,533, Cl. 330-5.500.

Miner Enterprises, Inc.: *See—*
Fischer, Robert T.; and Wahlstrom, Merle D., 4,542,701, Cl. 105-240.000.

Minick, Harold N.; and Wolff, Douglas F., to Wolff Wire Corporation. Storage accessories for movable partition systems. 4,542,832, Cl. 211-106.000.

Minnesota Mining and Manufacturing Company: *See—*
Bany, Stephen W.; Koshar, Robert J.; and Williams, Todd R., 4,543,398, Cl. 525-474.000.
Forester, Roger J.; and White, Lloyd R., 4,543,113, Cl. 55-378.000.
Lorenz, William J.; and Larson, Wayne K., 4,543,315, Cl. 430-156.000.
Pastor, Sheldon L., 4,543,619, Cl. 360-97.000.
Sidney, LuAnn; and Ebner, Stephen R., 4,543,268, Cl. 427-44.000.

Minolta Camera: *See—*
Shibazaki, Kenji; Irie, Yutaka; Ito, Masazumi; and Murata, Tomoji, 4,543,643, Cl. 364-900.000.

Minolta Camera Kabushiki Kaisha: *See—*
Ishida, Tokuji; and Hosomizu, Hiroshi, 4,542,975, Cl. 354-416.000.

Miraglia, John A.: *See—*
Gillett, John B.; and Miraglia, John A., 4,542,950, Cl. 339-75.0MP.

Misevich, Kenneth W.; Cross, Henry D., III; Dube, Roland E.; and McGregor, Rob R., to Colgate Palmolive Company. Athletic type shoe for tennis and other court games. 4,542,598, Cl. 36-114.000.

Missman, Eugene E. Fireplace loading tool. 4,542,927, Cl. 294-9.000.

Misumi, Akira: *See—*
Kumada, Masaharu; Tanabe, Hideo; Yuhara, Katsuo; Misumi, Akira; and Kawasaki, Hiroshi, 4,543,441, Cl. 136-249.000.

Mitra, Gautam; and Ng, Paul K., to Miles Laboratories, Inc. Process for producing a high purity antihemophilic factor concentrate. 4,543,210, Cl. 260-112.00B.

Mitsubishi Chemical Industries Ltd.: *See—*
Itagaki, Takaharu; Ito, Tsuyoshi; Ando, Kiyoto; and Teshima, Hiromi, 4,543,365, Cl. 521-53.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, 4,543,504, Cl. 310-68.00D.
Morishita, Mitsuharu; and Kouge, Shinichi, 4,543,521, Cl. 320-64.000.
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Takase, Akio; Ogawa, Kohji; Tsutsumi, Takao; Yasuda, Yoshinori; and Taguchi, Hiroaki, 4,542,906, Cl. 273-185.00R.

Mitsuhashi, Yasuo: *See—*
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Mittal, Chander P.: *See—*
Ledeen, Howard L.; and Mittal, Chander P., 4,542,814, Cl. 192-0.098.

Miura, Isao: *See—*
Sugano, Shunji; Hagiwara, Koichi; Miura, Isao; and Honto, Akira, 4,543,404, Cl. 528-26.000.

Miura, Takeshi. Shock absorber. 4,542,811, Cl. 188-322.170.

Miura, Yasuhiro: *See—*
Tooka, Takuzo; Nozaki, Choji; Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Yamaoka, Yoshiaki; Goto, Hiroaki; and Miura, Yasuhiro, 4,542,560, Cl. 19-98.000.

Miyai, Masahiko: *See—*
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Miyashita, Yoshinobu; and Satomura, Shinji, to Wako Pure Chemical Industries, Ltd. Stabilization of oxidase. 4,543,326, Cl. 435-15.000.

Mizobata, Shiro: *See—*
Ito, Kenzo; and Mizobata, Shiro, 4,542,585, Cl. 30-210.000.

Mizuguchi, Ryuzo: *See—*
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Mizumoto, Muneo: *See—*
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Mizusaki, Yoshinobu, to Nisshin Kogyo Kabushiki Kaisha. Diaphragm assembly. 4,542,624, Cl. 60-535.000.

Mobil Oil Corporation: *See—*
Chang, Clarence D., 4,543,434, Cl. 585-310.000.
Goldstein, Theodore P., 4,543,178, Cl. 209-2.000.
Gould, Ronald M.; and Tabak, Samuel A., 4,543,435, Cl. 585-330.000.
Hoehn, Gustave L., Jr., 4,542,600, Cl. 37-195.000.

Modar, Inc.: *See—*
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Modell, Michael, to Modar, Inc. Processing methods for the oxidation of organics in supercritical water. 4,543,190, Cl. 210-721.000.

Moeller, Matthias; and Kausche, Helmold, to Siemens Aktiengesellschaft. Method for manufacturing finger electrode structures forming electric contacts at amorphous silicon solar cells. 4,543,443, Cl. 136-256.000.

Mogensen, Palne: *See—*
Santen, Sven; Mogensen, Palne; Kaij, Mats; and Thornblom, Jan, 4,543,470, Cl. 219-383.000.

Mogul Corporation, The: *See—*
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Mohaupt, Hubert: *See—*
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Mohsen, Amr M.; and Crook, Dwight L., to Intel Corporation. Fusible link employing capacitor structure. 4,543,594, Cl. 357-51.000.

Mohsin, Mohamed E., to National Research Development Corporation. Fluid bearings. 4,542,994, Cl. 384-101.000.

Molnar, Daniel O., to Sundstrand Data Control, Inc. Borehole inertial guidance system. 4,542,647, Cl. 73-151.000.

Moniteq Ltd.: *See—*
Zwick, Harold H., 4,543,481, Cl. 250-339.000.

Monsanto Co.: *See—*
Bollinger, Frederic G., 4,542,609, Cl. 47-57.600.

Montgomery, Glenn. Bow sight. 4,542,591, Cl. 33-265.000.

Montgomery, Robert H., Jr., to Kennametal Inc. Earthworking tool for protecting from abnormally high cutting loads. 4,542,943, Cl. 299-93.000.

Mook, Herbert A., Jr., to United States of America, Energy. Pulsed-neutron monochromator. 4,543,230, Cl. 376-110.000.

Moore, Alan F., to Dunlop Limited. Joint means. 4,543,010, Cl. 403-225.000.

Moore, Alan F.: *See—*
Ellis, Keith O.; and Moore, Alan F., 4,543,359, Cl. 514-390.000.

Moore, Michael L.: *See—*
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Moran, John C.: *See—*
Weisenbarger, Gale M.; and Moran, John C., 4,543,186, Cl. 210-221.200.

Moran, John H., to Interpace Corporation. Test terminal for use in an electric power transmission system. 4,543,523, Cl. 324-51.000.

Morca, Inc.: *See—*
Cruz, Jr., Mamerto M., 4,543,410, Cl. 536-84.000.

Moreau, Jean M., to Thomson-CSF. Regulator with a low drop-out voltage. 4,543,522, Cl. 323-303.000.

Morel, Didier: *See—*
Mignani, Gerard; and Morel, Didier, 4,543,433, Cl. 585-16.000.

Moretti, Anthony L.; and Pellolio, Anselmo P., Jr., to E. D. Bullard Company. Disposable protective film accessory for the lens of a respirator hood. 4,542,538, Cl. 2-438.000.

Mori, Tomohiro, to Victor Company of Japan, Ltd. Code generating apparatus. 4,543,620, Cl. 360-49.000.

Morijiri, Makoto: *See—*
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Morimoto, Hideyuki; Saeki, Masaru; and Kawakita, Tetsuya, to Ajinomoto Co., Inc. Process for the production of a fermentation starting material. 4,543,330, Cl. 435-110.000.

Morimoto, Naruaki: *See—*
Nagasawa, Shiro; Morimoto, Naruaki; Fujimura, Toshio; Itoh, Masayuki; and Taniguchi, Shinya, 4,542,730, Cl. 123-489.000.

Morimoto, Yoshiro: *See—*
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,543,077, Cl. 474-12.000.

Morioka, Katsuharu: *See—*
Tanaka, Masayuki; Morioka, Katsuharu; and Kishimoto, Akihiko, 4,543,390, Cl. 525-63.000.

Morishita, Mitsuharu; and Kouge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Charge control microcomputer device for vehicle. 4,543,521, Cl. 320-64.000.

Morita, Mikio: *See—*
Horie, Hiromichi; Morita, Mikio; and Arima, Itsuo, 4,543,208, Cl. 252-62.540.

Morita, Takashi: *See—*
Amada, Eiichi; Kuwahara, Hiroshi; Shirasu, Hirotoshi; Suzuki, Taihei; and Morita, Takashi, 4,543,652, Cl. 370-66.000.

Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre, to Firmenich SA. 1(7)-P-menthen-9-al. 4,543,429, Cl. 568-446.000.

Mortimer, Gary A.: *See—*
Ingraham, John T.; and Mortimer, Gary A., 4,542,714, Cl. 119-29.000.

Morton, Gerald H.: *See—*
Gardner, John F.; and Morton, Gerald H., 4,542,763, Cl. 137-340.000.

Morvan, Olivier: *See—*
Lombard, Claude; and Morvan, Olivier, 4,543,116, Cl. 65-40.000.

Moser, Winfried: *See—*
Britsch, Heinz; Klenk, Martin; Linder, Ernst; and Moser, Winfried, 4,542,727, Cl. 123-435.000.

Moss, Gerald. Gastrointestinal feeding and aspirating device for use in treating patients. 4,543,089, Cl. 604-93.000.

Motorola, Inc.: *See—*
Ziegner, Bernhard A., 4,543,544, Cl. 333-34.000.

Moulin, Blaise: *See—*
Bauer, Eric; and Moulin, Blaise, 4,542,999, Cl. 400-175.000.

Mount, Bruce E., to Perkin-Elmer Corporation, The. Method of making electrical connections to thin film coatings. 4,542,564, Cl. 29-25.350.

Mourrellone, Georges. Inking method and device for printing machine. 4,542,693, Cl. 101-350.000.

MSP, Inc.: *See—*
Przewalski, Zygmunt J., 4,542,703, Cl. 110-246.000.

Muchowski, Joseph M.; Greenhouse, Robert; Ackrell, Jack; Li, Tsung-Tee; and Pfister, Jurg R. ±2-[Phenethyl]-5-[(3,4-methylenedioxy)-α-hydroxybenzyl]pyrrolidine antihypertensives and use thereas. 4,543,361, Cl. 514-422.000.

Muellenheim, Thomas; and Nilius, Hans-Joachim, to Vacuumschmelze GmbH. System for the elimination of radio interference and method for its manufacture. 4,543,554, Cl. 336-83.000.

Mueller, Helmut: *See—*
Blum, Rainer; Buensch, Hellmut; Druschke, Wolfgang; and Mueller, Helmut, 4,543,393, Cl. 525-124.000.

Muir, Francis: *See—*
Ergas, Raymond A.; and Muir, Francis, 4,543,632, Cl. 364-421.000.

Mukai, Ryoichi, to Fujitsu Limited. Process for producing single crystalline semiconductor island on insulator. 4,543,133, Cl. 148-1.500.

Mulder, Douglas C., to Nordson Corporation. Powder spray gun and powder spray method. 4,543,274, Cl. 427-197.000.

Muller, Anton; Konig, Hubert; and Wolfbeis, Ludwig, to Eisen- und Drahtwerk Erlau Aktiengesellschaft. Tire chain. 4,542,779, Cl. 152-213.00A.

Muller, Bernard L.: *See—*
Schulte-elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,543,431, Cl. 568-826.000.

Muller, Josef; and Wunder, Johannes, to Voest-Alpine Aktiengesellschaft. Dust separator. 4,543,111, Cl. 55-230.000.

Mulligan, Robert J. Folding cap for pick-up truck. 4,542,911, Cl. 280-423.00R.

Mummey, Dale B.; and Oberman, Carl D., to AMP Incorporated. Operating mechanism for a plugboard system. 4,542,951, Cl. 339-75.00M.

Munro, David, to Shell Oil Company. Sulphonyl derivatives of N-phenyl pyridineamines. 4,543,413, Cl. 546-305.000.

Murakami, Hiroya; and Takasaki, Mitsuhiro, to Hitachi, Ltd. Apparatus for producing a magnetron. 4,543,071, Cl. 445-66.000.

Murakawa, Kazunori; Mitsuhashi, Yasuo; Uchide, Hitoshi; Takagi, Seiichi; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; and Imai, Eiichi, to Canon Kabushiki Kaisha. Magnetic toner comprising magnetic powders having controlled size distribution. 4,543,312, Cl. 430-107.000.

Muramoto, Susumu: *See—*
Itsumi, Manabu; Ehara, Kohei; Muramoto, Susumu; and Matsuo, Seitaro, 4,543,592, Cl. 357-43.000.

Murata Manufacturing Co., Ltd.: *See—*
Mandai, Harufumi; and Tomono, Kunisaburo, 4,543,553, Cl. 336-83.000.

Murata, Tomoji: *See—*
Shibazaki, Kenji; Irie, Yutaka; Ito, Masazumi; and Murata, Tomoji, 4,543,643, Cl. 364-900.000.

Muroi, Hiroshi: *See—*
Sato, Hisashi, 4,542,547, Cl. 5-453.000.

Murphy, Milford R.; and Haskins, Delbert E., to Textron Inc. Multiple loop control system. 4,542,679, Cl. 91-363.00A.

Murthy, Andiappan K. S.; Patel, Kundanbhai M.; and Bekker, Alex Y., to Allied Corporation. Production of light hydrocarbons by treatment of heavy hydrocarbons with water. 4,543,177, Cl. 208-130.000.

Musil, Frantisek: *See—*
Sladek, Zdenek; Musil, Frantisek; Podmela, Ladislav; and Bursa, Miloslav, 4,542,664, Cl. 74-804.000.

Musits, Bela: *See—*
Leverett, Theodore W.; and Musits, Bela, 4,543,032, Cl. 414-730.000.

Muyle, Eddy: *See—*
Van Campenhout, Jan; de Stecker, Hans; Notredame, Paul; Muyle, Eddy; Bergmans, Jean-Paul; and Bergmans, Patrick, 4,543,615, Cl. 358-285.000.

Muyskens, John R. Slalom sled arrangement. 4,542,908, Cl. 280-21.00A.

N. K. F. Groep B.V.: *See—*
Deurloo, Johannis M., 4,543,448, Cl. 174-112.000.

N L Industries, Inc.: *See—*
Foerster, George S., 4,543,234, Cl. 420-409.000.

Nabatame, Masaru: *See—*
Hara, Tomihiro; Adaniya, Takeshi; Sagiyama, Masaru; Watanabe, Tsutomu, Shimoma, Takashi; and Nabatame, Masaru, 4,543,300, Cl. 428-610.000.

Nabighian, Misac N.: *See—*
Boryta, Daniel A.; and Nabighian, Misac N., 4,543,525, Cl. 324-54.000.

Nabisco Brands, Inc.: *See—*
Michnowski, Jane, 4,543,262, Cl. 426-306.000.

Nachtkamp, Klaus: *See—*
Thoma, Wilhelm; Nachtkamp, Klaus; Schroer, Walter; and Langel, Rolf, 4,543,144, Cl. 156-230.000.

Naess, Tor: *See—*
Brandi, Roberto; Di Lena, Francesco; Vanore, Silvestro; Naess, Tor; and Schamaun, Paul U., 4,543,014, Cl. 405-207.000.

Nafziger, Steven: *See—*
Charbonneau, Arthur G.; Godfrey, Dwaine A.; McNennamy, John A.; and Nafziger, Steven, 4,542,649, Cl. 73-168.000.

Nagahara, Shusaku: *See—*
Ozawa, Naoki; Nagahara, Shusaku; Takahashi, Kenji; Takemoto, Iwao; Nishizawa, Shigeki; Sato, Masanori; and Suzuki, Satoshi, 4,543,610, Cl. 358-213.000.

Nagamine, Yoshifumi: *See—*
Matsuda, Yoshiaki; Oohashi, Yoshimitsu; Sanpei, Keiichi; and Nagamine, Yoshifumi, 4,543,079, Cl. 474-111.000.

Nagano, Masanobu: *See—*
Ueda, Ikuo; Kato, Masayuki; and Nagano, Masanobu, 4,543,356, Cl. 514-259.000.

Nagano, Takashi: *See—*
Tanaka, Osamu; Nakashima, Shozaburo; Nagano, Takashi; Kumano, Tomoji; and Hiromae, Yoshitaka, 4,543,134, Cl. 148-113.000.

Nagaoka, Isao: *See—*
Yamano, Masaru; Nagaoka, Isao; Kuwano, Yukinori; Kawada, Hiroshi; and Sakai, Souichi, 4,542,578, Cl. 29-572.000.
Nagasawa, Shiro; Morimoto, Naruaki; Fujimura, Toshio; Itoh, Masayuki; and Taniguchi, Shinya, to Nippondenso Co., Ltd. Method and apparatus for controlling air-fuel ratio of mixture for combustion engines. 4,542,730, Cl. 123-489.000.
Nagata, Minoru: *See—*
Kaneko, Kenji; Nagata, Minoru; Furihata, Makoto; Ogura, Setsuo; Okabe, Takahiro; and Sato, Mitsuya, 4,543,499, Cl. 307-477.000.
Nahara, Akira: *See—*
Akashi, Goro; Nahara, Akira; and Arai, Yoshihiro, 4,543,275, Cl. 427-250.000.
Naito, Shiro: *See—*
Yamanaga, Junichi; and Naito, Shiro, 4,542,576, Cl. 29-568.000.
Nakabayashi, Teiji: *See—*
Fujimoto, Yuji; Aono, Masayuki; Nakano, Tetuo; and Nakabayashi, Teiji, 4,542,783, Cl. 165-30.000.
Nakagawa, Satoshi: *See—*
Iijima, Toshifumi; Nakagawa, Satoshi; and Menjo, Hiroshi, 4,543,323, Cl. 430-503.000.
Nakai, Hideki: *See—*
Yoshinari, Osamu; Sugiyama, Makoto; and Nakai, Hideki, 4,543,241, Cl. 423-447.700.
Nakajima, Akira: *See—*
Kurosu, Masaaki; Nakayama, Takeshi; Nakajima, Akira; and Ohshima, Yoshimitsu, 4,543,631, Cl. 364-200.000.
Nakajima, Junya: *See—*
Ishikawa, Takatoshi; and Nakajima, Junya, 4,543,322, Cl. 430-380.000.
Nakajima, Yukio, to Olympus Optical Co., Ltd. Automatic focus controlling camera. 4,542,972, Cl. 354-402.000.
Nakamura, Kazuharu; Matsumoto, Motoki; and Yoshino, Tooru, to Toyotomi Kogyo Co., Ltd. Pot-type oil burner. 4,543,057, Cl. 431-208.000.
Nakamura, Ken'ichi; Sakagami, Teruo; Teramoto, Yoshikichi; and Obara, Hiroshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Polarized, shaped material of copolymer of vinylidene fluoride. 4,543,293, Cl. 428-421.000.
Nakamura, Tamio: *See—*
Aramaki, Minoru; Kobayashi, Yoshiyuki; Nakamura, Tamio; Nakano, Hisaji; and Suenaga, Takashi, 4,543,242, Cl. 423-406.000.
Nakanishi Metal Works Co., Ltd.: *See—*
Wakabayashi, Takao, 4,542,698, Cl. 104-172.00B.
Nakano, Hisaji: *See—*
Aramaki, Minoru; Kobayashi, Yoshiyuki; Nakamura, Tamio; Nakano, Hisaji; and Suenaga, Takashi, 4,543,242, Cl. 423-406.000.
Nakano, Tetuo: *See—*
Fujimoto, Yuji; Aono, Masayuki; Nakano, Tetuo; and Nakabayashi, Teiji, 4,542,783, Cl. 165-30.000.
Nakao, Toru; Ikebe, Tsuguo; Tahara, Tetsuya; Maruyama, Yutaka; and Yaoka, Osamu, to Yoshitomi Pharmaceutical Industries, Ltd. Antihypertensive 9-aminomethyl-benzo[f]quinoline-3,10-dione derivatives. 4,543,354, Cl. 514-238.000.
Nakashima, Shozaburo: *See—*
Tanaka, Osamu; Nakashima, Shozaburo; Nagano, Takashi; Kumano, Tomoji; and Hiromae, Yoshitaka, 4,543,134, Cl. 148-113.000.
Nakasuji, Mamoru; and Wada, Hirotsugu, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron beam exposure system. 4,543,512, Cl. 315-382.000.
Nakayama, Muneo, to Tokyo Denshi Kagaku Co., Ltd. Solution-dropping nozzle device. 4,542,710, Cl. 118-52.000.
Nakayama, Takeshi: *See—*
Kurosu, Masaaki; Nakayama, Takeshi; Nakajima, Akira; and Ohshima, Yoshimitsu, 4,543,631, Cl. 364-200.000.
Nanasi, John; and Reinitz, Ernest, to Nei Gold Products Inc. Decorative ornament for a band or chain. 4,542,630, Cl. 63-3.000.
Nankee, Robert J.; Vivian, Thomas A.; and Groves, Kenneth O., to Dow Chemical Company, The. Recovery of polyethylene terephthalate (PET). 4,543,364, Cl. 521-40.000.
Nara, Shigeo: *See—*
Ishiwari, Kazuo; Ohmori, Akira; Tomihashi, Nobuyuki; Yuhara, Sumiko; Kaino, Toshikuni; Jinguji, Kaname; and Nara, Shigeo, 4,542,957, Cl. 350-96.340.
National Distillers and Chemical Corporation: *See—*
Barlow, Anthony; and Marginger, Melvin F., 4,543,381, Cl. 524-188.000.
National Gypsum Company: *See—*
Johnson, Robert M.; and Melling, Elmer M., 4,543,159, Cl. 162-164.100.
National Research Development Corporation: *See—*
Cawley, Peter; and Adams, Robert D., 4,542,639, Cl. 73-12.000.
Mohsin, Mohamed E., 4,542,994, Cl. 384-101.000.
Naylor, Dennis, to Smith, David Charles. Car ramp. 4,542,881, Cl. 254-88.000.
Naylor, Paul H.: *See—*
Goldstein, Allan L.; Low, Teresa L. K.; McClure, John; and Naylor, Paul H., 4,543,340, Cl. 436-542.000.
NCR Corporation: *See—*
Osmera, Miroslav S.; Huynh, Van-Minh; and Calnek, Trevor A., 4,542,998, Cl. 400-139.000.
Nebelung, Hermann H., to Emhart Industries, Inc. Mould opening and closing mechanism. 4,543,118, Cl. 65-360.000.
Neches, Philip M., to Teradata Corporation. Data processing systems and methods. 4,543,630, Cl. 364-200.000.
Negami Chemical Indústrial Co., Ltd.: *See—*
Sugano, Shunji; Hagiwara, Koichi; Miura, Isao; and Honto, Akira, 4,543,404, Cl. 528-26.000.
Nei Gold Products Inc.: *See—*
Nanasi, John; and Reinitz, Ernest, 4,542,630, Cl. 63-3.000.
Nelson, Elliot, to American Cyanamid Co. Hair spray compositions containing methylmethacrylate-methacrylic acid copolymers. 4,543,249, Cl. 424-70.000.
Nelson, Norvell J., to PSI Star. Process and apparatus for etching copper masked by a nickel-gold mask. 4,543,153, Cl. 156-656.000.
Nemet, Mihaly, to Budapesti Radiotechnikai Gyar. Antenna arrangement for personal radio transceivers. 4,543,581, Cl. 343-702.000.
Neumann, Frank D.: *See—*
Caldwell, Allan L.; Hardy, Richard; and Neumann, Frank D., 4,542,866, Cl. 244-45.00A.
Neumeyer, John L., to Northeastern University. (−)-10,1L Methylenedioxy-N-N-propylnoraporphine and methods employing it for inhibiting the effects of epileptic seizures and for prevention and treatment of duodenal ulcers. 4,543,256, Cl. 514-280.000.
Newbold, F. E. Dixon: *See—*
Levine, Edward H.; and Newbold, F. E. Dixon, 4,542,839, Cl. 224-36.000.
Newport Corporation: *See—*
McCrickerd, John T., 4,542,956, Cl. 350-96.200.
Ng, Paul K.: *See—*
Mitra, Gautam; and Ng, Paul K., 4,543,210, Cl. 260-112.00B.
NGK Insulators, Ltd.: *See—*
Matsui, Minoru; and Takahashi, Tomonori, 4,543,346, Cl. 501-120.000.
Nguyen-Van-Nguyen, Jean: *See—*
Defeuilly, Jean P.; and Nguyen-Van-Nguyen, Jean, 4,543,661, Cl. 455-76.000.
Nichols, Richard D. E.: *See—*
Bianchi, John E.; Nichols, Richard D. E.; and Gerfen, Richard, 4,542,841, Cl. 224-193.000.
Nickerson, David L. Method of manufacturing hinged cellular insulating inserts for masonry building blocks. 4,543,229, Cl. 264-46.400.
Nifco Ind.: *See—*
Shimbara, Sakuzo, 4,542,810, Cl. 188-290.000.
Nihon Kentetsu Co., Ltd.: *See—*
Hirooka, Hiroshi; Yoshida, Yoshio; Fukushi, Toshio; and Takeya, Yasuo, 4,542,633, Cl. 68-12.00R.
Nihon Nohyaku Co., Ltd.: *See—*
Hikawa, Masanori; and Toyoda, Ippei, 4,543,119, Cl. 71-90.000.
Niimi, Hiroshi: *See—*
Tooka, Takuzo; Nozaki, Choji; Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Yamaoka, Yoshiaki; Goto, Hiroaki; and Miura, Yasuhiro, 4,542,560, Cl. 19-98.000.
Nilius, Hans-Joachim: *See—*
Muellenheim, Thomas; and Nilius, Hans-Joachim, 4,543,554, Cl. 336-83.000.
Nintendo Co., Ltd.: *See—*
Yokoi, Gunpei; and Okada, Satoru, 4,542,903, Cl. 273-85.00G.
Nippon Columbia Kabushiki Kaisha: *See—*
Kobayashi, Yoshikazu, 4,543,617, Cl. 358-342.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Yamato, Toshio; Ohba, Tsutomu; and Kabata, Tunetoshi, 4,543,219, Cl. 261-109.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Hara, Tomihiro; Adaniya, Takeshi; Sagiyama, Masaru; Watanabe, Tsutomu; Shimoma, Takashi; and Nabatame, Masaru, 4,543,300, Cl. 428-610.000.
Nippon Oil Company, Ltd.: *See—*
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,543,406, Cl. 528-111.500.
Nippon Oil and Fats Co., Ltd.: *See—*
Edamura, Kohji; Torii, Akio; Hattori, Katsuhide; and Sakai, Hiroshi, 4,543,136, Cl. 149-21.000.
Edamura, Koji; Torii, Akio; Sato, Kazuyuki; and Sakai, Hiroshi, 4,543,137, Cl. 149-21.000.
Nippon Paint Co., Ltd.: *See—*
Ishikura, Shinichi; Yoshioka, Tamotsu; and Mizuguchi, Ryuzo, 4,543,216, Cl. 260-501.120.
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,543,406, Cl. 528-111.500.
Nippon Petrochemicals Company, Limited: *See—*
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,543,207, Cl. 252-570.000.
Nippon Seiki Kabushiki Kaisha: *See—*
Tanaka, Seizou, 4,543,475, Cl. 235-96.000.
Nippon Steel Corporation: *See—*
Tanaka, Osamu; Nakashima, Shozaburo; Nagano, Takashi; Kumano, Tomoji; and Hiromae, Yoshitaka, 4,543,134, Cl. 148-113.000.
Nippon Telegraph and Telephone Public Corporation: *See—*
Ishiwari, Kazuo; Ohmori, Akira; Tomihashi, Nobuyuki; Yuhara, Sumiko; Kaino, Toshikuni; Jinguji, Kaname; and Nara, Shigeo, 4,542,957, Cl. 350-96.340.
Itsumi, Manabu; Ehara, Kohei; Muramoto, Susumu; and Matsuo, Seitaro, 4,543,592, Cl. 357-43.000.
Matsuo, Seitaro; Kiuchi, Mikiho; and Sekimoto, Misao, 4,543,266, Cl. 427-38.000.
Takagi, Akihiro; Yamada, Shinichi; and Sugawara, Syohei, 4,543,574, Cl. 340-825.500.

Nippondenso Co., Ltd.: *See—*
Nagasawa, Shiro; Morimoto, Naruaki; Fujimura, Toshio; Itoh, Masayuki; and Taniguchi, Shinya, 4,542,730, Cl. 123-489.000.

Nippondenxo Co., Ltd.: *See—*
Harada, Takashi; Kobayashi, Akio; Honda, Masakazu; Harada, Susumu; Fujimoto, Masaya; and Suzuki, Masatoshi, 4,543,176, Cl. 204-406.000.

Nishijima, Hideo: *See—*
Kobori, Yasunori; Okamoto, Kaneyuki; Fukushima, Isao; Sekiya, Masataka; Nishijima, Hideo; Kano, Kenji; and Sakae, Tetsuo, 4,543,516, Cl. 318-318.000.

Nishizawa, Shigeki: *See—*
Ozawa, Naoki; Nagahara, Shusaku; Takahashi, Kenji; Takemoto, Iwao; Nishizawa, Shigeki; Sato, Masanori; and Suzuki, Satoshi, 4,543,610, Cl. 358-213.000.

Nissan Kogyo Kabushiki Kaisha: *See—*
Takeuchi, Hiroo, 4,542,680, Cl. 91-369.00A.

Nissan Motor Company, Ltd.: *See—*
Suhara, Akito; Takasugi, Kazuhiko; Sato, Toshihide; Ono, Masashi; Higuchi, Kazuo; and Chiba, Tatsuya, 4,543,378, Cl. 524-100.000.
Tachibana, Akira; Fujiki, Norio; Endo, Hiroshi; Yamaki, Kiyoshi; and Kishi, Norimasa, 4,543,577, Cl. 340-904.000.
Tanaka, Haruto; Yamaki, Kiyoshi; and Suzuki, Hidetaka, 4,543,572, Cl. 340-723.000.
Yamamuro, Sigeaki; Kumura, Haruyoshi; Tanaka, Yoshikazu; Abo, Keiju; and Hirano, Hiroyuki, 4,542,665, Cl. 74-866.000.
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,543,077, Cl. 474-12.000.
Yasuhara, Seishi, 4,542,725, Cl. 123-299.000.

Nisshin Kogyo Kabushiki Kaisha: *See—*
Mizusaki, Yoshinobu, 4,542,624, Cl. 60-535.000.

Nittetsu Steel Drum Co., Ltd.: *See—*
Tsukamura, Takao, 4,543,025, Cl. 413-6.000.

Nixdorf Computer AG: *See—*
Tewes, Udo; and Roeschlein, Rolf, 4,542,949, Cl. 339-75.00M.

NMR Imaging, Inc.: *See—*
Mee, Gary L.; and Willcott, M. Robert, 4,543,529, Cl. 324-313.000.

Noda, Shigeo; Yamashita, Yasuhiro; and Imamura, Kosei, to Toyoda Koki Kabushiki Kaisha. Numerically controlled machine tool system capable of setting up tools into tool magazine. 4,543,636, Cl. 364-474.000.

Noding, Stephen A., to Dow Chemical Company, The. Selective electrochemical oxidation of organic compounds. 4,543,173, Cl. 204-263.000.

Nohmi Bosai Kogyo Co., Ltd.: *See—*
Handa, Takashi; and Okayama, Yoshiaki, 4,543,273, Cl. 427-126.300.

Noll, Gerhard: *See—*
Elter, Claus; Noll, Gerhard; Schoening, Josef; Schwiers, Hans-Georg; and Stracke, Wilfried, 4,543,232, Cl. 376-289.000.

Nordson Corporation: *See—*
Mulder, Douglas C., 4,543,274, Cl. 427-197.000.

Normalair-Garrett (Holdings) Limited: *See—*
Hamlin, Humphrey A. S.; and Taylor, James C., 4,543,109, Cl. 55-25.000.

Norsk Agip A/S: *See—*
Brandi, Roberto; Di Lena, Francesco; Vanore, Silvestro; Naess, Tor; and Schamaun, Paul U., 4,543,014, Cl. 405-207.000.

North American Philips Corporation: *See—*
Barnes, Casper W.; and Towfiq, Farhad, 4,542,744, Cl. 128-660.000.

Northeastern University: *See—*
Neumeyer, John L., 4,543,256, Cl. 514-280.000.

Norton Company: *See—*
Rue, Charles V., 4,543,107, Cl. 51-309.000.

Norton, Jerry J., to Phillips Petroleum Company. FSK modulation using switched outputs of two oscillators. 4,543,541, Cl. 332-16.00R.

Norton, Richard V.: *See—*
Stamerjohn, David M.; Norton, Richard V.; and Sturtz, Gregory P., 4,543,163, Cl. 203-37.000.

Noser, Friedrich: *See—*
Konrad, Eugen; Braun, Hans J.; Mager, Herbert; Noser, Friedrich; and Bracher, Max, 4,543,425, Cl. 564-442.000.

Noto, Vincent H.; and Yalof, Stanley, to Tetrahedron Associates, Inc. Laminating process and apparatus. 4,543,147, Cl. 156-288.000.

Notredame, Paul: *See—*
Van Campenhout, Jan; de Stecker, Hans; Notredame, Paul; Muyle, Eddy; Bergmans, Jean-Paul; and Bergmans, Patrick, 4,543,615, Cl. 358-285.000.

Novo Industri A/S: *See—*
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,543,333, Cl. 435-188.000.

Nowack, Gerhard P.: *See—*
Johnson, Marvin M.; and Nowack, Gerhard P., 4,543,436, Cl. 585-466.000.

Nozaka, Yoshiki, to Dai Nippon Insatsu Kabushiki Kaisha. Apparatus for splicing successive web rolls to feed a web into a rotary press or the like. 4,543,152, Cl. 156-502.000.

Nozaki, Choji: *See—*
Tooka, Takuzo; Nozaki, Choji; Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Yamaoka, Yoshiaki; Goto, Hiroaki; and Miura, Yasuhiro, 4,542,560, Cl. 19-98.000.

Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, to Fanuc Ltd. Method for compensating for servo delay caused at an arc or corner. 4,543,625, Cl. 364-169.000.

Numata, Saburo, to Fuji Photo Optical Co., Ltd. Automatic focusing apparatus. 4,542,971, Cl. 354-403.000.

Nunley, Allen; and Kampfer, John G., to Halliburton Company. Detector pulse forming system for nuclear well logging tools. 4,543,478, Cl. 250-261.000.

Ny, Nils O., to RCA Corporation. Mechanically-actuated touchbars and touchplates using multiple-closure switches. 4,543,562, Cl. 340-365.00S.

Oakley, Clyde G.; Guess, Joe F.; Robbins, Cheston W.; Kelly, Robert M.; Skaar, Dean N.; and Walker, Stephen D., to Technicare Corporation. Ultrasonic emulsion fluids. 4,542,745, Cl. 252-312.000.

Obara, Hiroshi: *See—*
Nakamura, Ken'ichi; Sakagami, Teruo; Teramoto, Yoshikichi; and Obara, Hiroshi, 4,543,293, Cl. 428-421.000.

Oberman, Carl D.: *See—*
Mummey, Dale B.; and Oberman, Carl D., 4,542,951, Cl. 339-75.00M.

Oberstein, Karla; and Thilo, Peer, to Siemens Aktiengesellschaft. Method and apparatus for monitoring an alarm system. 4,543,565, Cl. 340-506.000.

Oce-Nederland B.V.: *See—*
Everhardus, Roelof H.; and van Lomm, Gerard J. E. H., 4,543,310, Cl. 430-59.000.

Ochi, Hisayuki: *See—*
Murakawa, Kazunori; Mitsuhashi, Yasuo; Uchide, Hitoshi; Takagi, Seiichi; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; and Imai, Eiichi, 4,543,312, Cl. 430-107.000.

O'Connell, Thomas E.: *See—*
Berczik, Douglas M.; Brodi, George; and O'Connell, Thomas E., 4,543,132, Cl. 148-11.50F.

Oda, Ronald L.: *See—*
Harris, Gary R.; and Oda, Ronald L., 4,543,018, Cl. 406-102.000.

Oddou, Jacques: *See—*
Pichot, Jacky; and Oddou, Jacques, 4,542,849, Cl. 236-1.0EB.

O'Dell, C. Allen: *See—*
Shealy, Y. Fulmer; and O'Dell, C. Allen, 4,543,255, Cl. 514-258.000.

Ogawa, Kohji: *See—*
Takase, Akio; Ogawa, Kohji; Tsutsumi, Takao; Yasuda, Yoshinori; and Taguchi, Hiroaki, 4,542,906, Cl. 273-185.00R.

Ogura, Setsuo: *See—*
Kaneko, Kenji; Nagata, Minoru; Furihata, Makoto; Ogura, Setsuo; Okabe, Takahiro; and Sato, Mitsuya, 4,543,499, Cl. 307-477.000.

Ohba, Tsutomu: *See—*
Yamato, Toshio; Ohba, Tsutomu; and Kabata, Tunetoshi, 4,543,219, Cl. 261-109.000.

Ohkawa, Tihiro, to GA Technologies Inc. Multiple pinch method and apparatus for producing average magnetic well in plasma confinement. 4,543,231, Cl. 376-133.000.

Ohlschlager, Hans: *See—*
Schumann, Hans-Joachim; Ohlschlager, Hans; and Kampfer, Helmut, 4,543,308, Cl. 430-21.000.

Ohmori, Akira: *See—*
Ishiwari, Kazuo; Ohmori, Akira; Tomihashi, Nobuyuki; Yuhara, Sumiko; Kaino, Toshikuni; Jinguji, Kaname; and Nara, Shigeo, 4,542,957, Cl. 350-96.340.

Ohmori, Kouichi: *See—*
Yoshikawa, Ryoichi; Ohmori, Kouichi; and Watanabe, Isao, 4,542,974, Cl. 354-415.000.

Ohshima, Yoshimitsu: *See—*
Kurosu, Masaaki; Nakayama, Takeshi; Nakajima, Akira; and Ohshima, Yoshimitsu, 4,543,631, Cl. 364-200.000.

Ohtsuki, Toru: *See—*
Fukuta, Masaharu; Oshima, Yoshio; Ishikawa, Sako; and Ohtsuki, Toru, 4,543,641, Cl. 364-756.000.

Ojakaar, Leo: *See—*
Finlay, Joseph B.; and Ojakaar, Leo, 4,543,394, Cl. 525-276.000.

Okabe, Takahiro: *See—*
Kaneko, Kenji; Nagata, Minoru; Furihata, Makoto; Ogura, Setsuo; Okabe, Takahiro; and Sato, Mitsuya, 4,543,499, Cl. 307-477.000.

Okada, Osami: *See—*
Sakudo, Noriyuki; Abe, Katsunobu; Tokiguchi, Katsumi; Koike, Hidemi; and Okada, Osami, 4,543,465, Cl. 219-121.0PD.

Okada, Satoru: *See—*
Yokoi, Gunpei; and Okada, Satoru, 4,542,903, Cl. 273-85.00G.

Okamoto, Kaneyuki: *See—*
Kobori, Yasunori; Okamoto, Kaneyuki; Fukushima, Isao; Sekiya, Masataka; Nishijima, Hideo; Kano, Kenji; and Sakae, Tetsuo, 4,543,516, Cl. 318-318.000.

Okamoto, Takeshi: *See—*
Minagawa, Shoichi; and Okamoto, Takeshi, 4,543,533, Cl. 330-5.500.

Okawa, Masao: *See—*
Kato, Hisanori; and Okawa, Masao, 4,542,660, Cl. 74-27.000.

Okayama, Yoshiaki: *See—*
Handa, Takashi; and Okayama, Yoshiaki, 4,543,273, Cl. 427-126.300.

Okouchi, Isao; Takahashi, Sankichi; Izumi, Kenkichi; Miyai, Masahiko; and Otake, Katsumoto, to Hitachi, Ltd. Apparatus for removing foreign matters from condenser cooling water. 4,543,188, Cl. 210-304.000.

Okuda, Toshio, to Wu, Ming Nan. Umbrella. 4,542,758, Cl. 135-25.00R.

Okuno, Sumio: *See—*
Sato, Kazuo; Yamaguchi, Sumio; Kato, Shigeo; Matsumura, Yasuhide; Mizumoto, Muneo; Okuno, Sumio; and Tamura, Naoyuki, 4,542,712, Cl. 118-726.000.

Okunola, Olatunji: *See*—
Alcorn, George E.; Leinkram, Charles Z.; and Okunola, Olatunji, 4,543,442, Cl. 136-255.000.
Okura, Masahiko. Cable clamp. 4,542,562, Cl. 24-136.00R.
Olesen, Paul; Lensky, Albert; and Pendzich, Richard J., to Swingline, Inc. Staple forming and driving machine. 4,542,844, Cl. 227-7.000.
Oliphant, Andrew, to British Broadcasting Corporation. Color television systems. 4,543,598, Cl. 358-11.000.
Olsen, Ralph A.; and Cuthbertson, Robert H., to United States of America, Navy. Linked-spar motion-compensated lifting system. 4,543,070, Cl. 441-5.000.
Olson, Keith D. Folding mechanic's work dolly. 4,542,806, Cl. 182-152.000.
Olympus Optical Company, Ltd.: *See*—
Horikawa, Yoshiaki, 4,543,476, Cl. 250-201.000.
Nakajima, Yukio, 4,542,972, Cl. 354-402.000.
Sato, Masaaki, 4,543,618, Cl. 360-15.000.
OMI International Corporation: *See*—
Lash, Ronald J., 4,543,166, Cl. 204-44.200.
Omika, Hiroyoshi: *See*—
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,543,406, Cl. 528-111.500.
Omo, R.B, Jr., to Bath Iron Works Corporation. Alignment device and die adjustment apparatus for punch presses and the like. 4,542,674, Cl. 83-527.000.
Omura, Yoshiaki. Portable daylight electrophotography apparatus. 4,542,969, Cl. 354-354.000.
O'Neill, Christopher. Early pregnancy detection by detecting enhanced blood platelet activation. 4,543,339, Cl. 436-510.000.
Ono, Masashi: *See*—
Suhara, Akito; Takasugi, Kazuhiko; Sato, Toshihide; Ono, Masashi; Higuchi, Kazuo; and Chiba, Tatsuya, 4,543,378, Cl. 524-100.000.
Ono, Sumio: *See*—
Chiba, Ko; Wada, Yoshiaki; Miida, Hiroshi; and Ono, Sumio, 4,542,907, Cl. 277-140.000.
Oohashi, Yoshimitsu: *See*—
Matsuda, Yoshiaki; Oohashi, Yoshimitsu; Sanpei, Keiichi; and Nagamine, Yoshifumi, 4,543,079, Cl. 474-111.000.
Oprysko, Modest M.; and Beranek, Mark W., to Gould Inc. Method for depositing a micron-size metallic film on a transparent substrate utilizing a visible laser. 4,543,270, Cl. 427-53.100.
Oregon Graduate Center for Study & Research: *See*—
Hauser, Frank M.; and Mal, Dipakranjan, 4,543,428, Cl. 568-345.000.
Original Electric Mfg. Co., Ltd.: *See*—
Tsunakawa, Shoji, 4,542,582, Cl. 29-622.000.
Orth, Charles D.; and Torrence, Robert J., to Singer Company, The. Vibration damping device for thermostatic expansion valves. 4,542,852, Cl. 236-92.00B.
Orth, Gunther, to Wolf-Gerate GmbH. Apparatus for renewing green areas and lawns. 4,542,705, Cl. 111-85.000.
Oshima, Akio: *See*—
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,543,406, Cl. 528-111.500.
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Fukuta, Masaharu; Oshima, Yoshio; Ishikawa, Sako; and Ohtsuki, Toru, 4,543,641, Cl. 364-756.000.
Osmera, Miroslav S.; Huynh, Van-Minh; and Calnek, Trevor A., to NCR Corporation. Character set printing means utilizing rolling pressure contact for printing. 4,542,998, Cl. 400-139.000.
Osterloh, Rolf: *See*—
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,543,376, Cl. 523-414.000.
Otake, Katsumoto: *See*—
Okouchi, Isao; Takahashi, Sankichi; Izumi, Kenkichi; Miyai, Masahiko; and Otake, Katsumoto, 4,543,188, Cl. 210-304.000.
Otobe, Yutaka; and Kishi, Noriyuki, to Honda Giken Kogyo Kabushiki Kaisha. Method for controlling fuel supply to internal combustion engines having catalytic means for purifying exhaust gases, at operation in a high speed region. 4,542,728, Cl. 123-440.000.
Otobe, Yutaka: *See*—
Yamato, Akihiro; and Otobe, Yutaka, 4,542,729, Cl. 123-440.000.
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, to Nippon Paint Co., Ltd.; and Nippon Oil Company, Ltd. Cathode-depositing electrodeposition coating composition. 4,543,406, Cl. 528-111.500.
Otten, Brigitte: *See*—
Mehler, Doron; and Otten, Brigitte, 4,543,092, Cl. 604-164.000.
Outboard Marine Corporation: *See*—
Baltz, Gene F.; and Kingsley, Warren G., 4,542,726, Cl. 123-320.000.
Ovanesian, Karine L.: *See*—
Petrosian, Ashot G.; Kuzanian, Armen S.; Ovanesian, Karine L.; Butaeva, Tatyana I.; Shirinian, Grigory O.; and Avetisian, Ashot A., 4,543,342, Cl. 501-86.000.
Ovshinsky, Herbert C.: *See*—
Izu, Masatsugu; and Ovshinsky, Herbert C., 4,542,711, Cl. 118-718.000.
Owen, David P., to Marconi Instruments Limited. Diode bridge switching circuit with high attenuation. 4,543,495, Cl. 307-257.000.
Owen, David P., to Marconi Instruments Limited. Phase locked loop frequency and phase modulators. 4,543,542, Cl. 332-18.000.
Oy Lars Ludin Patent Ab: *See*—
Lundin, Lars, 4,542,555, Cl. 15-256.600.
Ozaki, Satoru: *See*—
Kaneko, Takeru; Ozaki, Satoru; Takizawa, Kimie; and Sugimoto, Hachiro, 4,543,254, Cl. 514-253.000.
Ozaki, Takayuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for recognizing a pellet pattern. 4,543,659, Cl. 382-8.000.
Ozawa, Naoki; Nagahara, Shusaku; Takahashi, Kenji; Takemoto, Iwao; Nishizawa, Shigeki; Sato, Masanori; and Suzuki, Satoshi, to Hitachi, Ltd. Solid-state imaging device including noise subtraction with polarity control. 4,543,610, Cl. 358-213.000.
Pachmayr Gun Works, Inc.: *See*—
Hoenig, George, 4,542,606, Cl. 42-75.00B.
Padget, John C.; and McIlrath, Donald H., to Imperial Chemical Industries PLC. Vinylidene chloride copolymer aqueous latex composition. 4,543,386, Cl. 524-523.000.
Padget, John C.; and McIlrath, Donald H., to Imperial Chemical Industries PLC. Aqueous latex copolymer compositions. 4,543,387, Cl. 524-523.000.
Palitex Project-Company GmbH: *See*—
Lossa, Ulrich, 4,542,618, Cl. 57-58.830.
Palley, Igor: *See*—
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,543,286, Cl. 428-288.000.
Palmer, Donald L., to Garrett Corporation, The. Fluid compressor control and operation. 4,543,036, Cl. 415-1.000.
Palmieri, Beniamino: *See*—
Caselgrandi, Ivo; and Palmieri, Beniamino, 4,542,749, Cl. 128-752.000.
PAMA S.p.A.: *See*—
Marazzini, Severino, 4,542,548, Cl. 12-142.00J.
Pan, Robert B.: *See*—
Salama, Mamdouh M.; and Pan, Robert B., 4,543,008, Cl. 403-174.000.
Panayoti, Peter: *See*—
Flor, Joseph R.; Havens, Richard F.; and Panayoti, Peter, 4,542,947, Cl. 339-54.000.
Pannu, Jaswant S. Universal intraocular lens. 4,542,541, Cl. 623-6.000.
Paper Converting Machine Company: *See*—
Bradley, John J.; and Hansen, Debra K., 4,543,141, Cl. 156-164.000.
Parekh, Dhan N., to Carborundum Abrasives Company. Coated abrasive product containing hollow microspheres beneath the abrasive grain. 4,543,106, Cl. 51-295.000.
Parekh, Girish G., to American Cyanamid Company. Thermosetting polyurethane compositions. 4,543,276, Cl. 427-388.300.
Park, Duk-Won; and Ryan, Theodore W., to University of Alabama. Borehole stress-meter and method and apparatus for the installation thereof. 4,542,655, Cl. 73-784.000.
Park, Im K., to Tenneco Polymers, Inc. Laminated skin-foamed core sandwich structures and method for their preparation. 4,543,289, Cl. 428-304.400.
Parker, Delmer G., to Xerox Corporation. Magnetizing apparatus for a magnetographic printer. 4,543,586, Cl. 346-74.400.
Parker, Richard W. Wireline oil pan. 4,542,787, Cl. 166-84.000.
Parks, John M.: *See*—
Brown, William J.; and Parks, John M., 4,542,924, Cl. 292-87.000.
Parks, Steven G.: *See*—
Holcombe, Robert R.; Parks, Steven G.; and Brogan, Patrick M., 4,542,708, Cl. 114-243.000.
Parlato, Frank. Pocket ball game. 4,542,904, Cl. 273-116.000.
Pascal-Mousselard, Michel: *See*—
Falgoux, Daniel; Simoulin, Danielle; and Pascal-Mousselard, Michel, 4,543,430, Cl. 568-678.000.
Pastor, Sheldon L., to Minnesota Mining and Manufacturing Company. Magnetic disk cartridge and disk drive. 4,543,619, Cl. 360-97.000.
Patel, Kundanbhai M.: *See*—
Murthy, Andiappan K. S.; Patel, Kundanbhai M.; and Bekker, Alex Y., 4,543,177, Cl. 208-130.000.
Patoflex Corporation: *See*—
Ehrlich, Johann, 4,543,222, Cl. 264-46.500.
Paulson, Robert C. Device for preventing improper operation of a slot machine. 4,542,817, Cl. 194-99.000.
Paust, Joachim: *See*—
Schmieder, Klaus; Paust, Joachim; Fischer, Rolf; and Weitz, Hans-Martin, 4,543,417, Cl. 549-375.000.
Pautz, Brigitte: *See*—
Albert, Winfried; Ziegenhorn, Joachim; Siedel, Joachim; Batz, Hans-Georg; Lenz, Helmut; and Pautz, Brigitte, 4,543,325, Cl. 435-7.000.
Pavie, Claude, to Hotchkiss-Brandt Sogeme H.B.S. Displacement bench for mail sorting equipment and letter guidance insertion flap equipping such a bench. 4,542,818, Cl. 198-480.000.
Payet, George L.; Hendrix, James E.; and Lowery, Jack R., Sr., to Springs Industries, Inc. Adjustable anvil for ultrasonic material cutting and sealing apparatus. 4,542,771, Cl. 139-302.000.
Pearce, David W.: *See*—
Taylor, Douglas R.; and Pearce, David W., 4,543,556, Cl. 336-210.000.
Pearl, David R., to Gerber Garment Technology, Inc. Sheet material conveyor loading apparatus. 4,542,672, Cl. 83-409.000.
Pearl, David R., to Gerber Garment Technology, Inc. Apparatus for sealing cut sheet material. 4,542,673, Cl. 83-422.000.
Pedersen, Narve S.; Persson, Wilfred L.; Hordvik, Jan; and Kristiansen, Arvid, to A/S Norsk Kabelfabrik. Fire or flame barrier material. 4,543,281, Cl. 428-36.000.
Pederson, Richard H., to Fisher Controls International, Inc. Charge amplifier with automatic zero. 4,543,536, Cl. 330-85.000.

Peerenboom, Robert J.: *See—*
Wolfe, Dexter L.; and Peerenboom, Robert J., 4,543,098, Cl. 604-370.000.

Peerman, Dwight E.; and Rogier, Edgar R., to Henkel Corporation. Alkoxylated polyester polyols and polyurethanes made therefrom. 4,543,369, Cl. 521-137.000.

Peffer, John R.: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,543,405, Cl. 528-78.000.

Pellolio, Anselmo P., Jr.: *See—*
Moretti, Anthony L.; and Pellolio, Anselmo P., Jr., 4,542,538, Cl. 2-438.000.

Pendzich, Richard J.: *See—*
Olesen, Paul; Lensky, Albert; and Pendzich, Richard J., 4,542,844, Cl. 227-7.000.

Pepper, John T., Sr.; and Felter, Brian A. Sling hook. 4,542,840, Cl. 224-150.000.

Percic, Milan, to Coulter Stork Patents B.V. Method and apparatus for forming a multicolor proof print. 4,542,979, Cl. 355-4.000.

Perez-Tubens, Drucilla M.; and Stewart, Thomas R., to Frontier Antiques, Inc. Garment hanger. 4,542,838, Cl. 223-87.000.

Perkin-Elmer Corporation, The: *See—*
Mount, Bruce E., 4,542,564, Cl. 29-25.350.

Persson, Wilfred L.: *See—*
Pedersen, Narve S.; Persson, Wilfred L.; Hordvik, Jan; and Kristiansen, Arvid, 4,543,281, Cl. 428-36.000.

Pertz, Eberhard: *See—*
Kudelski, Stefan; Rosselet, Ernest; and Pertz, Eberhard, 4,542,663, Cl. 74-801.000.

Petcen, Donald H., to Coburn Optical Industries, Inc. Wrinkle prevention in glass/plastic composite lenses. 4,543,146, Cl. 156-242.000.

Peter, Siegfried; Hartel, Georg; and Bruckhoff, Wolfgang. Process for preventing the precipitation of elementary sulphur in riser pipes of probes for natural gas. 4,543,193, Cl. 252-8.55B.

Peterman, Lee G.; and Staebel, Raymond J., to Atlantic Richfield Company. Process for controlling temperature of a Claus sulfur unit thermal reactor. 4,543,245, Cl. 423-574.00R.

Peters, Edward N., to General Electric Company. Di(phthalic anhydride) derivatives of di(disubstituted phenol) sulfones. 4,543,416, Cl. 549-241.000.

Peters, John W., to Hughes Aircraft Company. Silicon oxynitride material and photochemical process for forming same. 4,543,271, Cl. 427-54.100.

Peters, Raymond A. Strong box. 4,542,848, Cl. 232-4.00R.

Petersen, Christian C., to Polaroid Corporation. Apparatus for orienting magnetic particles in recording media. 4,543,551, Cl. 335-284.000.

Petersen, Eric R.: *See—*
Binder, Michael; Walker, Charles W., Jr.; Petersen, Eric R.; Wade, William L., Jr.; and Gilman, Sol, 4,543,305, Cl. 429-101.000.

Petersen, Kurt E.; Allen, Henry V.; and Knutti, James W., to Transensory Devices, Inc. Microminiature force-sensitive switch. 4,543,457, Cl. 200-83.00N.

Petersen, Peter, to Allied Corporation. Method of using a high-pressure vessel furnace. 4,543,058, Cl. 432-9.000.

Petretti, Anthony V., to Metro Hoist & Body Co., Inc. Eductor truck. 4,543,183, Cl. 210-187.000.

Petrosian, Ashot G.; Kuzanian, Armen S.; Ovanesian, Karine L.; Butaeva, Tatyana I.; Shirinian, Grigory O.; and Avetisian, Ashot A. Single-crystalline jewelry material based on aluminium garnets. 4,543,342, Cl. 501-86.000.

Pfaff Industriemaschinen GmbH: *See—*
Balzer, Dieter; and Hager, Walter, 4,542,707, Cl. 112-310.000.

Pfister, Jurg R.: *See—*
Muchowski, Joseph M.; Greenhouse, Robert; Ackrell, Jack; Li, Tsung-Tee; and Pfister, Jurg R., 4,543,361, Cl. 514-422.000.

Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,543,334, Cl. 435-253.000.

Philipp, Bernhard: *See—*
Feldkamper, Richard; Maneke, Siegfried; and Philipp, Bernhard, 4,542,894, Cl. 271-11.000.

Phillips, Bradford E., to 'totes' incorporated. Umbrella with advertising flag. 4,542,757, Cl. 135-16.000.

Phillips, Dorothy J., to Dow Chemical Company, The. 3-Trichloromethyl-5-substituted-1,2,4-thiadiazoles as ruminant animal growth promoters. 4,543,357, Cl. 514-361.000.

Phillips, Paul E., to McGraw-Edison Company. Rotary floor maintenance device. 4,542,551, Cl. 15-49.00R.

Phillips Petroleum Company: *See—*
Johnson, Marvin M.; and Nowack, Gerhard P., 4,543,436, Cl. 585-466.000.
Norton, Jerry J., 4,543,541, Cl. 332-16.00R.
Reed, Jerry O.; and Mathis, Ronald D., 4,543,224, Cl. 264-211.000.
Smith, Dexter E., 4,543,637, Cl. 364-500.000.
Spence, J. Ronald; and Jack, Douglas S., 4,543,194, Cl. 252-33.000.
Stapp, Paul R., 4,542,789, Cl. 166-274.000.

Pichl, Heinz: *See—*
Brandt, Lennart; and Pichl, Heinz, 4,543,068, Cl. 440-53.000.

Pichot, Jacky; and Oddou, Jacques, to Electricite de France. Method and apparatus for regulating a heating installation in premises including a plurality of heat generators. 4,542,849, Cl. 236-1.0EB.

Picquendar, Jean-Edgar; Henaff, Jeannine; and Feldmann, Michel, to L'Etat Francais. Demodulation filter for a signal modulated in binary frequency manner. 4,543,547, Cl. 333-193.000.

Pierce, Jon C.: *See—*
Gramse, Jack A.; and Pierce, Jon C., 4,543,182, Cl. 210-95.000.

Piersol, Jay L.: *See—*
Blevins, Jack F.; and Piersol, Jay L., 4,543,384, Cl. 524-501.000.

Pilati, Luciano: *See—*
Belforte, Piero; Bondonno, Mario; Bostica, Bruno; and Pilati, Luciano, 4,543,653, Cl. 370-66.000.

Pilzer, Daniel C., to D P Sales, Inc. Carpet sample system. 4,542,827, Cl. 206-483.000.

Piotrowski, Herbert: *See—*
Kuhn, Michael H.; Piotrowski, Herbert; and Geppert, Rudolf, 4,543,537, Cl. 330-129.000.

Planning Research Corporation: *See—*
Welsh, James W., 4,542,784, Cl. 165-80.00B.

Plantronics, Inc.: *See—*
Sotelo, James M.; and Porozoff, Peter J., 4,543,665, Cl. 455-606.000.

Plapp, Charles D.; and Choc, Anton, to Dimple Tie Co., Inc. Necktie clincher. 4,542,537, Cl. 2-148.000.

Plastic Specialties and Technologies, Inc.: *See—*
Gaylord, Norman G., 4,543,401, Cl. 526-204.000.

Podmela, Ladislav: *See—*
Sladek, Zdenek; Musil, Frantisek; Podmela, Ladislav; and Bursa, Miloslav, 4,542,664, Cl. 74-804.000.

Polaroid Corporation: *See—*
Costa, Peter F.; and Whiteside, George D., 4,542,967, Cl. 354-187.000.
Johnson, Bruce K.; and Whiteside, George D., 4,542,973, Cl. 354-413.000.
Mehta, Avinash C.; and Taylor, Lloyd D., 4,543,317, Cl. 430-219.000.
Petersen, Christian C., 4,543,551, Cl. 335-284.000.

Pollerspock, Kurt, to Siemens Aktiengesellschaft. Explosion-proof switching installation with a bus bar duct. 4,543,455, Cl. 200-50.00B.

Polysar Limited: *See—*
Crossman, James A., 4,543,377, Cl. 524-13.000.

Pomfret, Stephen T., to Digital Equipment Corporation. Bus for data processing system with fault cycle operation. 4,543,628, Cl. 364-200.000.

Ponticello, Gerald S., to Merck & Co., Inc. Process for preparing tricyclic indoles. 4,543,415, Cl. 548-436.000.

Poponiak, Michael R.; and Schwenker, Robert O., to International Business Machines Corporation. Method for forming aluminum oxide dielectric isolation in integrated circuits. 4,542,579, Cl. 29-576.00W.

Poppelreiter, Joseph C., II, to Kubik, Incorporated. Electronic position and velocity control system with cold start compensation. 4,543,517, Cl. 318-632.000.

Porozoff, Peter J.: *See—*
Sotelo, James M.; and Porozoff, Peter J., 4,543,665, Cl. 455-606.000.

Porta-Test Systems, Ltd.: *See—*
Beattie, David L. G.; Bear, Herbert; and Willis, Robin B., 4,543,114, Cl. 55-418.000.

Porter, Stuart C.; and Woznicki, Edward J., to Colorcon, Inc. Dry edible film coating composition, method and coating form. 4,543,370, Cl. 523-100.000.

Portescap: *See—*
Heyraud, Marc, 4,543,507, Cl. 310-266.000.

Portmann, Walter: *See—*
Troesch, Juerg; and Portmann, Walter, 4,543,128, Cl. 106-23.000.

Poska, Richard P.: *See—*
Smith, Daniel J.; Glasscock, Jessie F., Jr.; Poska, Richard P.; and Kuder, Carl L., 4,542,646, Cl. 73-78.000.

Possinger, Warren K. Articulating clam type grapple for a backhoe. 4,542,929, Cl. 294-88.000.

Poujois, Robert: *See—*
Audoin, Marcel; Fedeli, Jean-Marc; and Poujois, Robert, 4,543,564, Cl. 340-365.00C.

Power, Donald L. Bosun chair support apparatus. 4,542,804, Cl. 182-38.000.

PPG Industries, Inc.: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,543,405, Cl. 528-78.000.

Preston Engravers, Inc.: *See—*
Kesten, Martin, 4,542,671, Cl. 83-343.000.

Prevorsek, Dusan C.: *See—*
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,543,286, Cl. 428-288.000.

Price, John G. Steam sack vulcanizing method. 4,543,140, Cl. 156-157.000.

Primary Diagnostic Systems, Inc.: *See—*
Ettare, Ross C., 4,542,750, Cl. 128-760.000.

Prime Computer, Inc.: *See—*
Delivorias, Peter, 4,542,580, Cl. 29-590.000.
Marino, Jerry C.; and Desilets, David E., 4,542,872, Cl. 248-183.000.

Prince, Vernon. Portable fan blade and sheave removing device. 4,542,570, Cl. 29-252.000.

Prinz, Peter: *See—*
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, 4,543,217, Cl. 260-544.00A.

Procter & Gamble Company, The: *See—*
Reiter, Godfrey, 4,543,154, Cl. 156-73.100.

Prvi brnenska strojirna, koncernovy podnik: *See—*
Sladek, Zdenek; Musil, Frantisek; Podmela, Ladislav; and Bursa, Miloslav, 4,542,664, Cl. 74-804.000.

Przewalski, Zygmunt J., to MSP, Inc. Counter current incineration unit. 4,542,703, Cl. 110-246.000.

PSI Star: *See—*
Nelson, Norvell J., 4,543,153, Cl. 156-656.000.

Public Safety Equipment, Inc.: *See—*
Menke, W. Kenneth; and Jincks, Danny C., 4,543,622, Cl. 362-219.000.

Puff, Roger: *See—*
Dreuilhe, Jacques; Puff, Roger; Kita, Jean-Claude; and Large, Jean-Francois, 4,542,716, Cl. 122-4.00D.

Puntschart, Ernst: *See—*
Glantschnig, Josef; Gugl, Peter; Puntschart, Ernst; and Zimmer, Johannes P. M., 4,542,692, Cl. 101-123.000.

Purinton, Robert J., Jr., to Dow Chemical Company, The. Aqueous crosslinked gelled pigs for cleaning pipelines. 4,543,131, Cl. 134-8.000.

Puumalainen, Pertti; Rantanen, Rauno; and Sikanen, Pertti, to Enso-Gutzeit Oy. Procedure and means for creating an electron curtain with adjustable intensity distribution. 4,543,487, Cl. 250-493.100.

QO Chemicals, Inc.: *See—*
Krawiec, Robert; and Menting, James E., 4,543,373, Cl. 523-144.000.
Menting, James E., 4,543,374, Cl. 523-144.000.

Quaker Oats Company, The: *See—*
Bansal, Arun K., 4,542,686, Cl. 99-483.000.

Quantel Limited: *See—*
Taylor, Richard J.; Kellar, Paul R. N.; and Greenhalgh, Stephen P., 4,543,607, Cl. 358-140.000.

Quantic Industries, Inc.: *See—*
Wells, John L., 4,542,694, Cl. 102-229.000.

Quartino, Miguel A., to Hoyt/Easton. Bow with vertically and horizontally adjustable arrow support. 4,542,731, Cl. 124-24.00R.

Quartz Engineering & Materials, Inc.: *See—*
Whang, J. S.; and Wollmann, Andrew F., 4,543,059, Cl. 432-11.000.

Quinlan, James M., to American Cyanamid Company. Anthelmintic gel composition and a method for their preparation at ambient temperatures. 4,543,358, Cl. 514-368.000.

Quinton Instrument Company: *See—*
Sommercorn, Richard K.; and Quinton, Wayne E., 4,543,087, Cl. 604-43.000.

Quinton, Wayne E.: *See—*
Sommercorn, Richard K.; and Quinton, Wayne E., 4,543,087, Cl. 604-43.000.

Quiogue, Honesto D., to Harvey Hubbell Incorporated. Adjustable luminaire support knuckle. 4,543,007, Cl. 403-97.000.

Radio Research Laboratories, Ministry of Posts and Telecommunications: *See—*
Teshirogi, Tasuku, 4,543,579, Cl. 343-365.000.

Radvan, Bronislaw; Skelding, William T. H.; and Willis, Anthony J., to Wiggins Teape Group Limited, The. Fibre reinforced plastics sheets. 4,543,288, Cl. 428-297.000.

RAI Research Corporation: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; Zapisek, Stephen; and Schore, George, 4,543,169, Cl. 204-105.00R.

Rakoczynski, Randolph W.: *See—*
Wagner, Louis E.; Flannery, Harold F.; and Rakoczynski, Randolph W., 4,543,013, Cl. 405-128.000.

Raley, Garland E.; and Spear, Dean M., to Ethyl Corporation. Laminated, seamless, cylindrical metal screen for vacuum perforation of thermoplastic film. 4,543,299, Cl. 428-596.000.

Ramus, Kevin J., to Ford Motor Company. Bus bar arrangement for uniformly heating a trapezoidally-shaped electrically heated windshield. 4,543,466, Cl. 219-203.000.

Randall, Kenneth R.: *See—*
Bryand, Edward T.; and Randall, Kenneth R., 4,542,596, Cl. 34-115.000.

Randwal Instrument Co., Inc.: *See—*
Remijan, Paul W., 4,542,989, Cl. 356-373.000.

Rantanen, Rauno: *See—*
Puumalainen, Pertti; Rantanen, Rauno; and Sikanen, Pertti, 4,543,487, Cl. 250-493.100.

Rao, G. R. Mohan: *See—*
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,543,500, Cl. 307-530.000.
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,543,501, Cl. 307-530.000.

Rasch, Klaus-Dieter; and Flodl, Helmut, to Telefunken electronic GmbH. Solar-cell. 4,543,444, Cl. 136-256.000.

Raval, Claude: *See—*
Thomas, Jacques; and Raval, Claude, 4,542,825, Cl. 206-363.000.

Rawls, H. Ralph: *See—*
Gettleman, Lawrence; Farris, Charles L.; Rawls, H. Ralph; and LeBouef, Ralph J., Jr., 4,543,379, Cl. 523-120.000.

Ray, David B., to Versatile Equipment Co., Inc. Exercise or therapy device or apparatus. 4,542,900, Cl. 272-134.000.

Raychem Corporation: *See—*
Horsma, David A.; Lyons, Bernard J.; and Smith-Johannsen, Robert, 4,543,474, Cl. 219-553.000.

Raymond, Kenneth N.: *See—*
Weitl, Frederick L.; and Raymond, Kenneth N., 4,543,213, Cl. 260-239.0BC.

Rayner, Adrien P., to Metal Box P.L.C. Aerosol actuator. 4,542,837, Cl. 222-402.110.

Raytheon Company: *See—*
Ayasli, Yalcin, 4,543,535, Cl. 330-53.000.
Blight, Ronald E.; and Schloemann, Ernst F. R. A., 4,543,543, Cl. 333-24.100.
Holcombe, Robert R.; Parks, Steven G.; and Brogan, Patrick M., 4,542,708, Cl. 114-243.000.

RCA Corporation: *See—*
Bolger, Thomas V., 4,543,600, Cl. 358-13.000.
Firester, Arthur H.; and D'Aiello, Robert V., 4,543,171, Cl. 204-129.300.
Ny, Nils O., 4,543,562, Cl. 340-365.00S.
Shwartzman, Stanley, 4,543,130, Cl. 134-1.000.
Willis, Donald H.; and Fling, Russell T., 4,543,599, Cl. 358-13.000.
Wine, Charles M., 4,543,563, Cl. 340-365.00S.

RCA Corporaton: *See—*
Chen, Keming J., 4,543,614, Cl. 358-193.100.

Reba, Imants, to Crown Zellerbach Corporation. Pneumatic conveying method for flexible webs. 4,542,842, Cl. 225-2.000.

Recker, Richard D.: *See—*
Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,542,938, Cl. 297-445.000.

Recovery Technology, Inc.: *See—*
Capella, Joseph A., 4,543,165, Cl. 203-89.000.

Reed, Jerry O.; and Mathis, Ronald D., to Phillips Petroleum Company. Polymer stabilization. 4,543,224, Cl. 264-211.000.

Reed Rock Bit Company: *See—*
Madigan, James A., 4,542,798, Cl. 175-340.000.

Regeants of University of Calif., The: *See—*
Temes, Gabor C.; and Martin, Kenneth W., 4,543,534, Cl. 330-9.000.

Regie Nationale des Usines Renault: *See—*
Lombard, Claude; and Morvan, Olivier, 4,543,116, Cl. 65-40.000.

Regli, Johann: *See—*
Somlo, Tibor; and Regli, Johann, 4,543,214, Cl. 260-384.000.

Regutti, Carl W.: *See—*
Weidner, Ralph F.; Regutti, Carl W.; and Liao, Chien W., 4,543,121, Cl. 75-5.000.

Reichen, Fredy: *See—*
Marti, Wilhelm; and Reichen, Fredy, 4,542,921, Cl. 285-114.000.

Reid, John H. Conservation of momentum in a barrier oxidation ditch. 4,543,185, Cl. 210-194.000.

Reier, John C.: *See—*
Shaffer, Jacob E., Jr.; Reier, John C.; and Tome, Frederick C., Jr., 4,543,468, Cl. 219-279.000.

Reilly, Patrick J. Hand-operated knitting apparatus. 4,542,632, Cl. 66-64.000.

Reimann, Robert C.: *See—*
Sarkisian, Paul H.; Reimann, Robert C.; and Biermann, Wendell J., 4,542,628, Cl. 62-335.000.

Reinitz, Ernest: *See—*
Nanasi, John; and Reinitz, Ernest, 4,542,630, Cl. 63-3.000.

Reiter, Godfrey, to Procter & Gamble Company, The. Method for severing a laminated web containing a dimensionally heat unstable layer to produce non-linear shirred edges. 4,543,154, Cl. 156-73.100.

Remijan, Paul W., to Randwal Instrument Co., Inc. Apparatus for position encoding. 4,542,989, Cl. 356-373.000.

Renken, Wayne G.; and LeMay, Dan B., to Innovus. Thermal mass flow meter. 4,542,650, Cl. 73-204.000.

Republic Steel Corporation: *See—*
Baraona, John P., 4,543,528, Cl. 324-262.000.

Research Corporation of the University of Hawaii: *See—*
Heinicke, Ralph M., 4,543,212, Cl. 546-1.000.

Reuter, Martin; and Konig, Johannes. Method and apparatus for determining a relative distance in a cylinder and piston assembly. 4,542,652, Cl. 73-597.000.

Revoyr, Dennis. Method and apparatus for inverting an injector razor blade. 4,542,575, Cl. 29-426.200.

Reynolds, Richard W., to Sundstrand Corporation. Combined engine-starter and accessory drive system. 4,542,722, Cl. 123-179.00E.

Rheinmetall GmbH: *See—*
Bisping, Bernhard; Wallow, Peter; Gersbach, Klaus; and Romer, Rudolf, 4,542,696, Cl. 102-430.000.

Rhode Gear USA: *See—*
Levine, Edward H.; and Newbold, F. E. Dixon, 4,542,839, Cl. 224-36.000.

Rhone-Poulenc Sante: *See—*
Mignani, Gerard; and Morel, Didier, 4,543,433, Cl. 585-16.000.

Rice, Michael A.; and Herman, Stewart T., to Bethlehem Steel Corp. Removal of complexed zinc-cyanide from wastewater. 4,543,189, Cl. 210-713.000.

Richards, David L.; and Windish, Willis E., to Caterpillar Tractor Co. Vehicle transfer gear mechanism. 4,542,801, Cl. 180-53.100.

Richardson, Gary H.; and Thorpe, J. Derle, to Utah State University Foundation. Apparatus and methods for measuring milk coagulation time and rigidity in the manufacture of fermented dairy products. 4,542,645, Cl. 73-64.100.

Richey, Earl D., to United States of America, Army. Jointed conveyor. 4,542,819, Cl. 198-584.000.

Rideal, Graham R.: *See—*
Briggs, Peter J.; McAloon, Kevin; and Rideal, Graham R., 4,543,287, Cl. 428-288.000.

Riedl, Josef, to Stahlcord Betriebsgesellschaft m.b.H. Metal cord. 4,543,298, Cl. 428-592.000.

Riker, Rudolf, to Stetter GmbH. Device for separating coarse and fine particles from ultrafines. 4,543,180, Cl. 209-44.000.

Riley, Victor, to Canadian Patents and Development Limited. Barrier for floating pollutants. 4,543,012, Cl. 405-71.000.

Rinnai Corporation: *See—*
Sakakibara, Kuniyoshi, 4,543,056, Cl. 431-76.000.

Ristance Corporation: *See—*
Kennedy, Robert J., Jr.; Smith, Kendall S., II; and Brown, Gregory N., 4,542,822, Cl. 206-45.330.

Ritter, Ernst; Schwartz, Reinhard; and Warga, Johann, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,543,045, Cl. 417-499.000.

Ritz, Gerald. Method of making knobs and handles. 4,542,574, Cl. 29-417.000.

Ritz, Jurgen: *See—*
Doebler, Klaus P.; Graf, Knut; Jager, Kurt E.; Johannsen, Friedrich; Ritz, Jurgen; and Saatweber, Dietrich, 4,543,375, Cl. 523-348.000.

RJM, Inc.: *See—*
Johnson, Reaves, 4,542,687, Cl. 99-639.000.

Robbins, Cheston W.: *See—*
Oakley, Clyde G.; Guess, Joe F.; Robbins, Cheston W.; Kelly, Robert M.; Skaar, Dean N.; and Walker, Stephen D., 4,542,745, Cl. 252-312.000.

Robert Bosch GmbH: *See—*
Bressert, Edgar; Gulich, Gerhard; Martini, Helmut; Meny, Rudi; Sauer, Roland; and Wohr, Rolf, 4,543,570, Cl. 340-589.000.
Britsch, Heinz; Klenk, Martin; Linder, Ernst; and Moser, Winfried, 4,542,727, Cl. 123-435.000.
Kochendorfer, Heinrich; Lodige, Heinrich; Mohaupt, Hubert; Schempp, Roland; Schumacher, Werner; and Skambraks, Raimund, 4,542,678, Cl. 91-6.000.
Ritter, Ernst; Schwartz, Reinhard; and Warga, Johann, 4,543,045, Cl. 417-499.000.

Robert Morton DG Limited: *See—*
Hancock, John C., 4,542,682, Cl. 99-277.100.
Wilkinson, Noel R., 4,542,683, Cl. 99-277.200.

Roberts, John S.; and Waite, Frederick A., to Imperial Chemical Industries PLC. Modification of liquid hydrocarbons. 4,543,105, Cl. 44-55.000.

Roberts, Richard W., to Borg-Warner Corporation. Variable displacement compressor. 4,543,043, Cl. 417-222.000.

Robinson, Larry G.: *See—*
Streeter, Bert E.; and Robinson, Larry G., 4,542,603, Cl. 40-447.000.

Robyn, Pierre; and Deschepper, Pierre, to Glaverbel. Adding to silica refractory structures. 4,542,888, Cl. 266-44.000.

Rockwell International Corporation: *See—*
Brissette, Ronald N.; and Kumbier, Richard L., 4,542,996, Cl. 384-536.000.
Ladouceur, Lawrence C., 4,542,569, Cl. 29-159.00A.

Rodgers, Stephen D.; Dick, Richard J.; and McGinnis, Vincent D., to Battelle Development Corporation. Non-emissive, flame-retardant coating compositions. 4,543,418, Cl. 549-562.000.

Roeschlein, Rolf: *See—*
Tewes, Udo; and Roeschlein, Rolf, 4,542,949, Cl. 339-75.00M.

Rogier, Edgar R.: *See—*
Peerman, Dwight E.; and Rogier, Edgar R., 4,543,369, Cl. 521-137.000.

Rohler, Manfred: *See—*
Witte, Hans-Hermann; and Rohler, Manfred, 4,543,666, Cl. 455-612.000.

Rohm GmbH: *See—*
Heil, Ernst; Wenzel, Franz; Arndt, Peter J.; and Schellhaas, Walter, 4,543,383, Cl. 524-458.000.

Romer, Rudolf: *See—*
Bisping, Bernhard; Wallow, Peter; Gersbach, Klaus; and Romer, Rudolf, 4,542,696, Cl. 102-430.000.

Romike, Robert G.; and Byrd, Vernon H. Hand held trotline reel. 4,542,862, Cl. 242-96.000.

Ronning, Tor. Bracket for a work platform. 4,542,874, Cl. 248-238.000.

Roof, James L. Reclining chair. 4,542,935, Cl. 297-82.000.

Rooney, John M.: *See—*
Woods, John; Rooney, John M.; and Harris, Stephen J., 4,543,397, Cl. 525-455.000.

Roquette Freres: *See—*
Fleche, Guy; Gaset, Antoine; and Fabienne, Jacquet, 4,543,168, Cl. 204-78.000.

Rose, Douglas N., to United States of America, Army. Method and apparatus for using a photoacoustic effect for controlling various processes utilizing laser and ion beams, and the like. 4,543,486, Cl. 250-492.100.

Ross, Alonzo H.: *See—*
Frackelton, A. Raymond, Jr.; Eisen, Herman N.; and Ross, Alonzo H., 4,543,439, Cl. 935-92.000.

Ross Operating Valve Company: *See—*
Thornton, Douglas M.; and Mathis, Logan H., 4,542,767, Cl. 137-596.160.

Rossberger, Erwin: *See—*
Frohler, Hanns; and Rossberger, Erwin, 4,543,243, Cl. 423-478.000.

Rossean, Larry D.: *See—*
Ambrosius, William H., III; and Rossean, Larry D., 4,543,646, Cl. 364-900.000.

Rosselet, Ernest: *See—*
Kudelski, Stefan; Rosselet, Ernest; and Pertz, Eberhard, 4,542,663, Cl. 74-801.000.

Rossell Electronique SA: *See—*
Rossell, Jame, 4,543,462, Cl. 219-91.210.

Rossell, Jame, to Rossell Electronique SA. Method for establishing a galvanic bond between an insulated work piece and a welding electrode and an electrode arrangement for the execution and its use. 4,543,462, Cl. 219-91.210.

Rossiter, Thomas E. Metal fence post. 4,542,885, Cl. 256-69.000.

Rothkegel, Bernhard: *See—*
Schreiner, Horst; and Rothkegel, Bernhard, 4,543,223, Cl. 264-120.000.

Rotron, Inc.: *See—*
Harris, Dwight E., 4,542,768, Cl. 137-856.000.

Roux, Philippe. Gripping pliers. 4,542,669, Cl. 81-418.000.

Rowe, Russell H., Jr.; Lare, Paul J.; and Hahn, Henry, to Artech Corp. Surgical implant having a graded porous coating. 4,542,539, Cl. 623-16.000.

Roy, Rob J., to American Hospital Supply Corp. Apparatus and method for measuring cardiac output. 4,542,748, Cl. 128-713.000.

Rubinson, Barry L.: *See—*
Bean, Robert; Gardner, Edward A.; Chow, Michael; Rubinson, Barry L.; Lary, Richard F.; and Blackledge, Robert, 4,543,626, Cl. 364-200.000.

Rue, Charles V., to Norton Company. Vitrified bonded grinding wheels containing sintered gel aluminous abrasive grits. 4,543,107, Cl. 51-309.000.

Ruis, Jean-Pierre; and Soligny, Marcel R., to Societe National d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." . Stator assembly for an axial compressor. 4,543,039, Cl. 415-190.000.

Rumble, Clive S., to Corabelment A.G. Unitary electrical plug with multiple inlets and voltage converter. 4,543,624, Cl. 363-146.000.

Russell, Burdsall & Ward Corporation: *See—*
Capuano, Terry D., 4,543,023, Cl. 411-180.000.

Rutherford, Howard J.; and Withycombe, Donald A., to International Flavors & Fragrances Inc. Process for forming functional fluid and solid-containing thermoplastic films, uses thereof and process for producing same. 4,543,367, Cl. 521-79.000.

Rutzki, Edith. Device for tensioning straps. 4,542,883, Cl. 254-217.000.

Ryan, Theodore W.: *See—*
Park, Duk-Won; and Ryan, Theodore W., 4,542,655, Cl. 73-784.000.

S. Himmelstein and Company: *See—*
Himmelstein, Sydney, 4,542,643, Cl. 73-49.200.

Saatweber, Dietrich: *See—*
Doebler, Klaus P.; Graf, Knut; Jager, Kurt E.; Johannsen, Friedrich; Ritz, Jurgen; and Saatweber, Dietrich, 4,54[illegible], Cl. 523-348.000.

Saeki, Masaru: *See—*
Morimoto, Hideyuki; Saeki, Masaru; and Kawakita, Tetsuya, 4,543,330, Cl. 435-110.000.

Sagiyama, Masaru: *See—*
Hara, Tomihiro; Adaniya, Takeshi; Sagiyama, Masaru; Watanabe, Tsutomu; Shimoma, Takashi; and Nabatame, Masaru, 4,543,300, Cl. 428-610.000.

Sagusa, Hisayuki: *See—*
Mimura, Tomonori; Sagusa, Hisayuki; Satou, Takehide; and Takahashi, Katsuaki, 4,543,238, Cl. 422-63.000.

Saila, Karl F.: *See—*
Jones, Harold R.; and Saila, Karl F., 4,543,157, Cl. 162-134.000.

St. Clair, Anne K.; and St. Clair, Terry L., to United States of America, National Aeronautics and Space Administration. High temperature polyimide film laminates and process for preparation thereof. 4,543,295, Cl. 428-458.000.

St. Clair, Terry L.: *See—*
St. Clair, Anne K.; and St. Clair, Terry L., 4,543,295, Cl. 428-458.000.

Saint-Gobain Vitrage: *See—*
Burget, Paul; and Zortea, Michel, 4,543,117, Cl. 65-135.000.

St. Louis, Andre , to Cham-Co Plastic Industries Inc. Tractor fifth wheel bearing attachment. 4,542,912, Cl. 280-433.000.

St. Regis Paper Company: *See—*
Brenholdt, Irving R., 4,543,482, Cl. 250-343.000.

Saito, Kimiharu, to Iwatsu Electric Co., Ltd. Cathode ray tube with an electron lens for deflection amplification. 4,543,508, Cl. 313-429.000.

Sakae, Tetsuo: *See—*
Kobori, Yasunori; Okamoto, Kaneyuki; Fukushima, Isao; Sekiya, Masataka; Nishijima, Hideo; Kano, Kenji; and Sakae, Tetsuo, 4,543,516, Cl. 318-318.000.

Sakagami, Teruo; Arakawa, Noriyuki; and Kakutani, Haruko, to Kureha Kagaku Kogyo Kabushiki Kaisha. Polymer dielectric comprising copolymer of vinylidene fluoride, tetrafluoroethylene and ethylene. 4,543,294, Cl. 428-422.000.

Sakagami, Teruo: *See—*
Nakamura, Ken'ichi; Sakagami, Teruo; Teramoto, Yoshikichi; and Obara, Hiroshi, 4,543,293, Cl. 428-421.000.

Sakai, Hiroshi: *See—*
Edamura, Kohji; Torii, Akio; Hattori, Katsuhide; and Sakai, Hiroshi, 4,543,136, Cl. 149-21.000.
Edamura, Koji; Torii, Akio; Sato, Kazuyuki; and Sakai, Hiroshi, 4,543,137, Cl. 149-21.000.

Sakai, Souichi: *See—*
Yamano, Masaru; Nagaoka, Isao; Kuwano, Yukinori; Kawada, Hiroshi; and Sakai, Souichi, 4,542,578, Cl. 29-572.000.

Sakai, Takami: *See—*
Inokuchi, Haruhisa; and Sakai, Takami, 4,543,492, Cl. 307-82.000.

Sakakibara, Kuniyoshi, to Rinnai Corporation. Safety device for fan heater. 4,543,056, Cl. 431-76.000.

Sakakibara, Shinsuke: *See—*
Inaba, Hajimu; and Sakakibara, Shinsuke, 4,543,639, Cl. 364-513.000.

Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Method for producing halftone dots in a halftone plate recording apparatus. 4,543,613, Cl. 358-298.000.

Sakudo, Noriyuki; Abe, Katsunobu; Tokiguchi, Katsumi; Koike, Hidemi; and Okada, Osami, to Hitachi, Ltd. Microwave plasma source having improved switching operation from plasma ignition phase to normal ion extraction phase. 4,543,465, Cl. 219-121.0PD.

Salama, Mamdouh M.; and Pan, Robert B., to Conoco Inc. Stiffening for complex tubular joints. 4,543,008, Cl. 403-174.000.

Sanada, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Reciprocating piston flow meter with a fluid bypass. 4,542,651, Cl. 73-250.000.

Sanden Corporation: *See*—
Kurosawa, Akihito; and Anazawa, Osamu, 4,542,834, Cl. 221-116.000.

Sandoz Ltd.: *See*—
Troesch, Juerg; and Portmann, Walter, 4,543,128, Cl. 106-23.000.
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Saner, Kaspar, to Wirth Gallo Patent AG. Mass and force meter. 4,542,659, Cl. 73-862.380.

Sanpei, Keiichi: *See*—
Matsuda, Yoshiaki; Oohashi, Yoshimitsu; Sanpei, Keiichi; and Nagamine, Yoshifumi, 4,543,079, Cl. 474-111.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Fujimoto, Hiroaki, 4,542,723, Cl. 123-187.50R.

Santen, Sven; Mogensen, Palne; Kaij, Mats; and Thornblom, Jan, to SKF Steel Engineering AB. Means for electrically heating gases. 4,543,470, Cl. 219-383.000.

Sanyo Electric Co., Ltd.: *See*—
Yamano, Masaru; Nagaoka, Isao; Kuwano, Yukinori; Kawada, Hiroshi; and Sakai, Souichi, 4,542,578, Cl. 29-572.000.

Sanyo Machine Works, Ltd.: *See*—
Kondo, Tatsuhei; Takabe, Noboru; and Horiba, Takeshi, 4,543,350, Cl. 514-18.000.

Sarkisian, Paul H.; Reimann, Robert C.; and Biermann, Wendell J., to United States of America, Energy. Coupled dual loop absorption heat pump. 4,542,628, Cl. 62-335.000.

Sarosi, Jozsef: *See*—
Joo, Istvan; Schutz, Lajos; Sarosi, Jozsef; Szabo, Sandor P.; Taal, Janos; and Szebenyi, Otto , 4,543,635, Cl. 364-474.000.

Sartorius GmbH: *See*—
Roothe, Erich; Eger, Matthias; Stadler, Eberhard; and Engelhardt, Herbert, 4,542,800, Cl. 177-211.000.

Sartwell, James F.: *See*—
Van Polen, Alta R., 4,543,097, Cl. 604-333.000.

Sasaki, Takao: *See*—
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, 4,543,625, Cl. 364-169.000.

Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, to Nippon Petrochemicals Company, Limited. Electrical insulating oil and oil-filled electrical appliances. 4,543,207, Cl. 252-570.000.

Sato, Hisashi, to Muroi, Hiroshi, a part interest. Pnuematic mat with sensing means. 4,542,547, Cl. 5-453.000.

Sato, Kazuo; Yamaguchi, Sumio; Kato, Shigeo; Matsumura, Yasuhide; Mizumoto, Muneo; Okuno, Sumio; and Tamura, Naoyuki, to Hitachi, Ltd. Apparatus for molecular beam epitaxy. 4,542,712, Cl. 118-726.000.

Sato, Kazuyuki: *See*—
Edamura, Koji; Torii, Akio; Sato, Kazuyuki; and Sakai, Hiroshi, 4,543,137, Cl. 149-21.000.

Sato, Kunio: *See*—
Kozima, Yasuyuki; Sato, Kunio; Tadauchi, Masaharu; Suehiro, Hiroshi; and Inoue, Yasuo, 4,543,644, Cl. 364-900.000.

Sato, Masaaki, to Olympus Optical Company Limited. Tape recorder. 4,543,618, Cl. 360-15.000.

Sato, Masanori: *See*—
Ozawa, Naoki; Nagahara, Shusaku; Takahashi, Kenji; Takemoto, Iwao; Nishizawa, Shigeki; Sato, Masanori; and Suzuki, Satoshi, 4,543,610, Cl. 358-213.000.

Sato, Mitsuya: *See*—
Kaneko, Kenji; Nagata, Minoru; Furihata, Makoto; Ogura, Setsuo; Okabe, Takahiro; and Sato, Mitsuya, 4,543,499, Cl. 307-477.000.

Sato, Toshihide: *See*—
Suhara, Akito; Takasugi, Kazuhiko; Sato, Toshihide; Ono, Masashi; Higuchi, Kazuo; and Chiba, Tatsuya, 4,543,378, Cl. 524-100.000.

Sato, Yasuhisa, to Canon Kabushiki Kaisha. Triplet type objective. 4,542,961, Cl. 350-475.000.

Satomura, Shinji: *See*—
Miyashita, Yoshinobu; and Satomura, Shinji, 4,543,326, Cl. 435-15.000.

Satou, Takehide: *See*—
Mimura, Tomonori; Sagusa, Hisayuki; Satou, Takehide; and Takahashi, Katsuaki, 4,543,238, Cl. 422-63.000.

Sauer, Hans, to Matsushita Electric Works, Ltd.; and Sauer, Hans. Armature mounting for an electromagnetic relay. 4,543,550, Cl. 335-78.000.

Sauer, Roland: *See*—
Bressert, Edgar; Gulich, Gerhard; Martini, Helmut; Meny, Rudi; Sauer, Roland; and Wohr, Rolf, 4,543,570, Cl. 340-589.000.

Saurenman, Phillip E. Stiff metal ring and process for making it. 4,543,297, Cl. 428-582.000.

Sawada, Hiroyuki: *See*—
Iwata, Masayosi; Douke, Harumi; and Sawada, Hiroyuki, 4,543,456, Cl. 200-61.540.

Sawahata, Mamoru: *See*—
Fuyama, Moriaki; Tamura, Katsumi; Morijiri, Makoto; Sawahata, Mamoru; and Hachino, Hiroaki, 4,543,573, Cl. 340-781.000.

Sawatani, Kenji: *See*—
Shibasaki, Kazunori; and Sawatani, Kenji, 4,542,995, Cl. 384-224.000.

Scarffe, Michael F., to V.S. Engineering Ltd. Mechanical handling apparatus. 4,543,638, Cl. 364-513.000.

Scarrow, David: *See*—
Dunn, David C.; and Scarrow, David, 4,542,743, Cl. 128-327.000.

Scat Enterprises, Inc.: *See*—
Lyndhurst, Francis R., 4,542,720, Cl. 123-90.380.

Schaefer, Rudolf K., to Littelfuse, Inc. Panel mountable fuse holder. 4,543,557, Cl. 337-196.000.

Schaer, Robert H. Security device for cable television. 4,543,606, Cl. 358-114.000.

Schafer, Ewald; and Jung, Harald, to Karl Otto Braun Kg, Firma. Wound textile. 4,542,739, Cl. 128-156.000.

Schamaun, Paul U.: *See*—
Brandi, Roberto; Di Lena, Francesco; Vanore, Silvestro; Naess, Tor; and Schamaun, Paul U., 4,543,014, Cl. 405-207.000.

Schapel, Dietmar: *See*—
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Scheler, Philip E. Fireplace cap with preheated secondary air supply. 4,542,736, Cl. 126-139.000.

Scheller, Peter: *See*—
Schwarzfischer, Peter; Schmitz, Jochen; and Scheller, Peter, 4,543,009, Cl. 403-201.000.

Schellhaas, Walter: *See*—
Heil, Ernst; Wenzel, Franz; Arndt, Peter J.; and Schellhaas, Walter, 4,543,383, Cl. 524-458.000.

Schempp, Roland: *See*—
Kochendorfer, Heinrich; Lodige, Heinrich; Mohaupt, Hubert; Schempp, Roland; Schumacher, Werner; and Skambraks, Raimund, 4,542,678, Cl. 91-6.000.

Schering Aktiengesellschaft: *See*—
Daum, Joachim; Siewert, Gerhard; Topert, Michael; and Seliger, Hartmut, 4,543,329, Cl. 435-69.000.

Scherrer, Pascal; and Juillard, Yves, to Societe Alsacienne de Constructions Mechaniques de Mulhouse. Exit clip for insertion of the weft in the shed of a shuttleless weaving loom. 4,542,816, Cl. 139-448.000.

Schetina, Otto: *See*—
Zitz, Alfred; Wrulich, Herwig; Schetina, Otto; and Maier, Wilfried, 4,542,942, Cl. 299-81.000.

Schiapparelli Farmaceutici S.p.A.: *See*—
Messina, Michele, 4,543,351, Cl. 514-175.000.

Schierling, Bernhard, to Fichtel & Sachs AG. Frictional clutch assembly. 4,542,813, Cl. 192-70.270.

Schloemann, Ernst F. R. A.: *See*—
Blight, Ronald E.; and Schloemann, Ernst F. R. A., 4,543,543, Cl. 333-24.100.

Schlumberger Technology Corporation: *See*—
Hsu, Kai, 4,543,648, Cl. 367-29.000.

Schmieder, Klaus; Paust, Joachim; Fischer, Rolf; and Weitz, Hans-Martin, to BASF Aktiengesellschaft. ω,ω-Diacyloxy-2,6-dimethyl-octatrienoates and -octatrienals, their preparation and their use for the synthesis of terpene compounds. 4,543,417, Cl. 549-375.000.

Schmitz, Jochen: *See*—
Schwarzfischer, Peter; Schmitz, Jochen; and Scheller, Peter, 4,543,009, Cl. 403-201.000.

Schneider, Earl: *See*—
McArdle, Francis H.; and Schneider, Earl, 4,542,567, Cl. 29-156.80R.
McArdle, Francis H.; and Schneider, Earl, 4,543,040, Cl. 416-134.00A.

Schneider, Manfred; Deubel, Reinhold; and Zimmermann, Manfred, to Hoechst Aktiengesellschaft. Pigment formulation, a process for its preparation, and its use. 4,543,380, Cl. 524-159.000.

Schnell, Peter; Bihlmayer, Gustav; and Daume, Dietrich, to Chemie Linz Aktiengesellschaft. Process and apparatus for the continuous production of single-ply or multi-ply webs of heat-curable resin. 4,543,145, Cl. 156-231.000.

Schoen, Siegfried, to Siemens Aktiengesellschaft. Seat for a cordless telephone. 4,543,451, Cl. 179-2.0EA.

Schoening, Josef: *See*—
Elter, Claus; Noll, Gerhard; Schoening, Josef; Schwiers, Hans-Georg; and Stracke, Wilfried, 4,543,232, Cl. 376-289.000.

Schonenberger, Helmut: *See*—
von Angerer, Erwin; and Schonenberger, Helmut, 4,543,360, Cl. 514-415.000.

Schore, George: *See*—
D'Agostino, Vincent F.; Lee, Joseph Y.; Zapisek, Stephen; and Schore, George, 4,543,169, Cl. 204-105.00R.

Schreiner, Horst; and Rothkegel, Bernhard, to Siemens Aktiengesellschaft. Method for the dry molding of formed parts. 4,543,223, Cl. 264-120.000.

Schroer, Walter: *See*—
Thoma, Wilhelm; Nachtkamp, Klaus; Schroer, Walter; and Langel, Rolf, 4,543,144, Cl. 156-230.000.

Schuchmann, Russell P.; and Van Zeeland, Donald L., to Eaton Corporation. Proximity switch exhibiting improved start-up characteristics. 4,543,527, Cl. 324-207.000.

Schulte-elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., to Firmenich SA. Process for the preparation of polyunsaturated cycloaliphatic ketones. 4,543,431, Cl. 568-826.000.

Schumacher, Werner: *See*—
Kochendorfer, Heinrich; Lodige, Heinrich; Mohaupt, Hubert; Schempp, Roland; Schumacher, Werner; and Skambraks, Raimund, 4,542,678, Cl. 91-6.000.

Schumann, Hans-Joachim; Ohlschlager, Hans; and Kampfer, Helmut, to Agfa-Gevaert Aktiengesellschaft. Photographic recording process. 4,543,308, Cl. 430-21.000.

Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, to BASF Aktiengesellschaft. Heat-curable surface-coating agents, and their use. 4,543,376, Cl. 523-414.000.

Schutz, Lajos: *See*—
Joo, Istvan; Schutz, Lajos; Sarosi, Jozsef; Szabo, Sandor P.; Taal, Janos; and Szebenyi, Otto , 4,543,635, Cl. 364-474.000.

Schwab, Thomas F., to AT&T Bell Laboratories. Internal communication arrangement for a multiprocessor system. 4,543,627, Cl. 364-200.000.

Schwartz, Harold L.: *See*—
Brenman, Henry S.; Katz, Philip; and Schwartz, Harold L., 4,542,753, Cl. 128-788.000.

Schwartz, Helmut: *See*—
Hoffmann, Karl; Krulitsch, Dieter; and Schwartz, Helmut, 4,543,184, Cl. 210-193.000.

Schwartz, Nathan G., to Techniservice Division, Textured Yarn Company. Core yarn and method and apparatus for making. 4,542,619, Cl. 57-210.000.

Schwartz, Reinhard: *See*—
Ritter, Ernst; Schwartz, Reinhard; and Warga, Johann, 4,543,045, Cl. 417-499.000.

Schwarzfischer, Peter; Schmitz, Jochen; and Scheller, Peter, to Erco Leuchten GmbH, Firma. Internal endwise connector for channel profile. 4,543,009, Cl. 403-201.000.

Schwenker, Robert O.: *See*—
Poponiak, Michael R.; and Schwenker, Robert O., 4,542,579, Cl. 29-576.00W.

Schwiers, Hans-Georg: *See*—
Elter, Claus; Noll, Gerhard; Schoening, Josef; Schwiers, Hans-Georg; and Stracke, Wilfried, 4,543,232, Cl. 376-289.000.

SCM Corporation: *See*—
Lindstrom, Robert O., 4,542,847, Cl. 229-16.00D.

Scott, Richard D., to HR Textron Inc. Fluid delivery system. 4,542,761, Cl. 137-68.00A.

Scuricini, Giovan B., to Comitato Nazionale per l'Energia Nucleare. Method and apparatus for dynamic balancing of rotating bodies. 4,543,463, Cl. 219-121.0LH.

Seal, William W.; and Basa, Laddie A., to Andrew Corporation. Coaxial transmission line having an expandable and contractible bellows. 4,543,548, Cl. 333-243.000.

Seale, Edward G.: *See*—
Carlson, Ronald L.; and Seale, Edward G., 4,542,676, Cl. 84-94.00C.

Sears Manufacturing Company: *See*—
Bethell, George L.; Burch, Donald F.; and Hinkhouse, Lysle R., 4,542,887, Cl. 264-46.400.

Seaverns, Robert G.: *See*—
Hecht, Richard M.; and Seaverns, Robert G., 4,542,860, Cl. 242-72.00R.

Seawell, Jesse Q.: *See*—
Bardo, Charles J.; Seawell, Jesse Q.; Dylewski, Anthony J.; and Clark, John L., Jr., 4,543,218, Cl. 261-24.000.

Seitz Enzinger Noll Maschinenbau Aktiengesellschaft: *See*—
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Seki, Kunio; and Takeshita, Ritsuji, to Hitachi, Ltd. Amplifier. 4,543,539, Cl. 330-297.000.

Sekimoto, Misao: *See*—
Matsuo, Seitaro; Kiuchi, Mikiho; and Sekimoto, Misao, 4,543,266, Cl. 427-38.000.

Sekiya, Masataka: *See*—
Kobori, Yasunori; Okamoto, Kaneyuki; Fukushima, Isao; Sekiya, Masataka; Nishijima, Hideo; Kano, Kenji; and Sakae, Tetsuo, 4,543,516, Cl. 318-318.000.

Seliger, Hartmut: *See*—
Daum, Joachim; Siewert, Gerhard; Topert, Michael; and Seliger, Hartmut, 4,543,329, Cl. 435-69.000.

Selke, William A.; and Cartwright, William F., to Kimberly-Clark Corporation. Dry-forming of reconstituted tobacco and resulting product. 4,542,755, Cl. 131-370.000.

Selsted, Michael E.: *See*—
Lehrer, Robert I.; and Selsted, Michael E., 4,543,252, Cl. 514-12.000.

Semar, Jim. Downhole well tool. 4,542,788, Cl. 166-217.000.

Sentman, Robert C.: *See*—
Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., 4,543,407, Cl. 528-336.000.

Sentrol, Inc.: *See*—
Holce, Thomas J.; and Huckins, Charles M., 4,543,458, Cl. 200-61.700.

Severson, Walter C.: *See*—
Uihlein, Robert E.; and Severson, Walter C., 4,542,604, Cl. 40-475.000.

Seyb, Edgar J., Jr.; and Brown, Laurence A., to M&T Chemicals Inc. Control of anode gas evolution in trivalent chromium plating bath. 4,543,167, Cl. 204-51.000.

Shaffer, Jacob E., Jr.; Reier, John C.; and Tome, Frederick C., Jr., to Borg-Warner Corporation. Control system for water heater with external heat source. 4,543,468, Cl. 219-279.000.

Sharp Kabushiki Kaisha: *See*—
Anzai, Shunju; and Imanaka, Yoshiaki, 4,542,981, Cl. 355-14.00E.

Shawl, Edward T., to Atlantic Richfield Company. Process for the preparation of diphenylmethane dicarbamates and polymethylene polyphenyl carbamates. 4,543,419, Cl. 560-25.000.

Shealy, Y. Fulmer; and O'Dell, C. Allen, to Southern Research Institute. Carbocyclic analogs of purine 2'-deoxyribofuranosides. 4,543,255, Cl. 514-258.000.

Shedrow, Sidney. Suction cup mount for eyeglasses. 4,542,965, Cl. 351-57.000.

Shell Oil Company: *See*—
Burstain, Israel G.; and Goodall, Brian L., 4,543,389, Cl. 525-53.000.
Munro, David, 4,543,413, Cl. 546-305.000.
Stewart, Thomas L.; and Demny, Florian C., 4,543,191, Cl. 210-746.000.
Vinegar, Harold J.; and Wellington, Scott L., 4,542,648, Cl. 73-153.000.

Shepler, John E., to Sundstrand Corporation. Data converter and line driver for a digital data communication system. 4,543,496, Cl. 307-261.000.

Sherman, Guy J., to Sherman Laboratories, Inc. Contact lens preservative system cleaner and method. 4,543,200, Cl. 252-106.000.

Sherman Laboratories, Inc.: *See*—
Sherman, Guy J., 4,543,200, Cl. 252-106.000.

Shibasaki, Kazunori; and Sawatani, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Thrust bearing supporting device for an electric rotary machine. 4,542,995, Cl. 384-224.000.

Shibata, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Dynamic semiconductor memory and manufacturing method thereof. 4,543,597, Cl. 357-23.500.

Shibazaki, Kenji; Irie, Yutaka; Ito, Masazumi; and Murata, Tomoji, to Minolta Camera. Copying magnification setting device for an electrophotographic copying apparatus. 4,543,643, Cl. 364-900.000.

Shibuya, Tsunenori, to Diesel Kiki Co., Ltd. Vane compressor with means for obtaining sufficient back pressure upon vanes at the start of compressor. 4,543,049, Cl. 418-269.000.

Shih, Tsung-Shen T.; and Becker, Eckhard R., to Atlantic Richfield Company. Separation of isopropyl alcohol from tertiary butyl alcohol by selective adsorption. 4,543,432, Cl. 568-917.000.

Shikata, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Boring tool. 4,543,019, Cl. 408-57.000.

Shimadzu Corporation: *See*—
Komoto, Akira, 4,542,799, Cl. 177-177.000.

Shimbara, Sakuzo, to Nifco Ind. Damper device. 4,542,810, Cl. 188-290.000.

Shimizu, Toshihide: *See*—
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Shimoma, Takashi: *See*—
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Shin-Etsu Chemical Co., Ltd.: *See*—
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Shinozaki, Fumiaki: *See*—
Maeda, Minoru; Iwasaki, Masayuki; and Shinozaki, Fumiaki, 4,543,318, Cl. 430-288.000.

Shionogi & Co., Ltd.: *See*—
Sonoyama, Takayasu; Yagi, Shigeo; and Kageyama, Bunji, 4,543,331, Cl. 435-138.000.

Shiota, Kazuo; Suzuki, Kenji; and Fukui, Takashi, to Fuji Photo Film Co., Ltd. Method for detecting defocused photographic image. 4,542,984, Cl. 355-68.000.

Shirasu, Hirotoshi: *See*—
Amada, Eiichi; Kuwahara, Hiroshi; Shirasu, Hirotoshi; Suzuki, Taihei; and Morita, Takashi, 4,543,652, Cl. 370-66.000.

Shirata, Shigenobu; and Kurihara, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for controlling output of alarm information. 4,543,567, Cl. 340-519.000.

Shirinian, Grigory O.: *See*—
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Shogren, David K.: *See*—
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Shon, Sam. Hair drying device. 4,542,595, Cl. 34-95.000.

Shropshire, Lucius. Lockable hitch for trailern. 4,542,914, Cl. 280-507.000.

Shtipelman, Boris A., to USM Corporation. Method of manufacturing large gears. 4,543,020, Cl. 409-12.000.

Shuler, C. Calvin: *See*—
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Shwartzman, Stanley, to RCA Corporation. Megasonic cleaning apparatus and method. 4,543,130, Cl. 134-1.000.

Sidney, LuAnn; and Ebner, Stephen R., to Minnesota Mining and Manufacturing Company. Electron-beam adhesion-promoting treatment of polyester film base for magnetic recording media. 4,543,268, Cl. 427-44.000.

Siebertz, Dietmar; and Siebertz, Stephan, to Siebertz, Dietmar. Process and apparatus for the covering of playing balls. 4,543,143, Cl. 156-213.000.

Siebertz, Stephan: *See—*
Siebertz, Dietmar; and Siebertz, Stephan, 4,543,143, Cl. 156-213.000.
Siedel, Joachim: *See—*
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Siemens Aktiengesellschaft: *See—*
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Oberstein, Karla; and Thilo, Peer, 4,543,565, Cl. 340-506.000.
Pollerspock, Kurt, 4,543,455, Cl. 200-50.00B.
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Schreimer, Horst; and Rothkegel, Bernhard, 4,543,223, Cl. 264-120.000.
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Wolfram, Roland, 4,542,581, Cl. 29-600.000.
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Signs by Severson Rend A Sign, Inc.: *See—*
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Simerman, John L. Nestable set of ladders. 4,542,807, Cl. 182-178.000.
Simmons, Walter J., to Du Pont de Nemours, E. I., and Company. Constant-flow-rate dual-unit pump. 4,543,044, Cl. 417-342.000.
Simoulin, Danielle: *See—*
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Smearing, Robert W.; and Floryan, Daniel E., to General Electric Company. Foamable polyetherimide resin formulation. 4,543,368, Cl. 521-90.000.
Smith, Daniel J.; Glasscock, Jessie F., Jr.; Poska, Richard P.; and Kuder, Carl L., to Upjohn Company, The. Tablet hardness tester. 4,542,646, Cl. 73-78.000.
Smith, David C.: *See—*
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Smith, Kenneth G.; and Collings, John, to Thorn Emi Gas Appliances Limited. Gas fires. 4,542,735, Cl. 126-129.000.
Smith, Roy E., to Urban Transportation Development Corporation Ltd. Powered radial truck. 4,542,699, Cl. 105-99.000.
Smith, Roy E., to Urban Transportation Development Corporation Ltd. Three axle steered truck. 4,542,700, Cl. 105-166.000.
Smith, Stuart B., to Thermocell Development, Ltd. Sprayable urethane resin composition and method. 4,543,366, Cl. 521-78.000.
Smith, William V., to Lectrolarm Custom Systems, Inc. Television surveillance system. 4,543,609, Cl. 358-210.000.
SmithKline Beckman Corporation: *See—*
Callahan, James F.; Moore, Michael L.; and Yim, Nelson C., 4,543,349, Cl. 514-11.000.
Snow, Howard R., to Brand-Rex Company. Power safety lock system. 4,542,946, Cl. 339-40.000.
Snowden, Roger L.: *See—*
Schulte-elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,543,431, Cl. 568-826.000.
Societe Alsacienne de Constructions Mechaniques de Mulhouse: *See—*
Scherrer, Pascal; and Juillard, Yves, 4,542,816, Cl. 139-448.000.
Societe Anonyme dite: L'Oreal: *See—*
Contamin, Jean-Claude, 4,543,205, Cl. 252-546.000.
Societe Francaise de Stockage Geologique GEOSTOCK: *See—*
Colin, Pierre, 4,542,626, Cl. 62-45.000.
Societe National d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." : *See—*
Ruis, Jean-Pierre; and Soligny, Marcel R., 4,543,039, Cl. 415-190.000.
Societe Nationale Industrielle et Aerospatiale: *See—*
Laures, Pierre, 4,543,603, Cl. 358-109.000.
Sogabe, Masatoyo: *See—*
Kawada, Shigeki; Amemiya, Yoichi; and Sogabe, Masatoyo, 4,543,506, Cl. 310-156.000.
Soligny, Marcel R.: *See—*
Ruis, Jean-Pierre; and Soligny, Marcel R., 4,543,039, Cl. 415-190.000.
Solvent Extractors Inc.: *See—*
Gramse, Jack A.; and Pierce, Jon C., 4,543,182, Cl. 210-95.000.
Somerset Welding & Steel, Inc.: *See—*
Walker, Harold E., Jr., 4,542,931, Cl. 296-100.000.
Somlo, Tibor; and Regli, Johann, to Ciba-Geigy AG. Process for the preparation of bromoanthraquinones. 4,543,214, Cl. 260-384.000.
Sommer, Ronald G.; and Greenquist, Alfred C., to Miles Laboratories, Inc. Device and method for the quantitative determination of heparin in mammalian blood plasma. 4,543,335, Cl. 436-69.000.
Sommercorn, Richard K.; and Quinton, Wayne E., to Quinton Instrument Company. Double lumen catheter tip. 4,543,087, Cl. 604-43.000.
Sonntag, Patrick. Baling machine. 4,542,617, Cl. 56-341.000.
Sonoyama, Takayasu; Yagi, Shigeo; and Kageyama, Bunji, to Shionogi & Co., Ltd. Fermentative or enzymatic production of 2-keto-L-gulonic acid. 4,543,331, Cl. 435-138.000.
Sony Corporation: *See—*
Chiba, Tomosuke; Kato, Hiroshi; and Suganuma, Takashi, 4,543,510, Cl. 313-477.00R.
Sugita, Junkichi; and Yada, Hiroaki, 4,543,531, Cl. 329-50.000.
Wachi, Shigeaki, 4,543,650, Cl. 369-43.000.
Yazawa, Kenji; and Baba, Kenichi, 4,543,301, Cl. 428-621.000.
Sotelo, James M.; and Porozoff, Peter J., to Plantronics, Inc. Speakerphone with wireless infrared microphone. 4,543,665, Cl. 455-606.000.
Southard, Benny S.: *See—*
Matherly, James F.; and Southard, Benny S., 4,542,873, Cl. 248-218.400.
Southern Research Institute: *See—*
Shealy, Y. Fulmer; and O'Dell, C. Allen, 4,543,255, Cl. 514-258.000.
Sovonics Solar Systems: *See—*
Izu, Masatsugu; and Ovshinsky, Herbert C., 4,542,711, Cl. 118-718.000.
Sparks, David J.; Whitefoot, Keith; and Knubley, John S., to Castrol Limited. Liquid dispensing system. 4,542,836, Cl. 222-27.000.
Spastics Scoiety, The: *See—*
Singleton, John M., 4,542,918, Cl. 280-650.000.
Spaugh, Randall E. Highway warning device. 4,542,709, Cl. 116-63.00P.
Spear, Dean M.: *See—*
Raley, Garland E.; and Spear, Dean M., 4,543,299, Cl. 428-596.000.
Specified Ceiling Systems: *See—*
McCall, Francis L., 4,542,615, Cl. 52-729.000.
Spector, George: *See—*
Baptista, Raymond J.; and Spector, George, 4,542,597, Cl. 36-2.00R.
Spence, J. Ronald; and Jack, Douglas S., to Phillips Petroleum Company. Precarbonation in overbasing calcium petroleum sulfonates. 4,543,194, Cl. 252-33.000.
Springs Industries, Inc.: *See—*
Payet, George L.; Hendrix, James E.; and Lowery, Jack R., Sr., 4,542,771, Cl. 139-302.000.
Sta-Rite Industries, Inc.: *See—*
Ehret, Gordon F., 4,543,623, Cl. 362-267.000.
Stacey, Robert E., to Micro Spray (Australia) Pty. Ltd. Agricultural spraying device. 4,542,855, Cl. 239-690.000.
Stadler, Eberhard: *See—*
Knothe, Erich; Eger, Matthias; Stadler, Eberhard; and Engelhardt, Herbert, 4,542,800, Cl. 177-211.000.
Staebel, Raymond J.: *See—*
Peterman, Lee G.; and Staebel, Raymond J., 4,543,245, Cl. 423-574.00R.
Stahel, Nancy G., to Land O'Lakes, Inc. Method of treating oilseed material. 4,543,264, Cl. 426-629.000.
Stahlcord Betriebsgesellschaft m.b.H.: *See—*
Riedl, Josef, 4,543,298, Cl. 428-592.000.
Stamerjohn, David M.; Norton, Richard V.; and Sturtz, Gregory P., to Ashland Oil, Inc. Process for recovery of amine from spent acid stripping liquor. 4,543,163, Cl. 203-37.000.

Standard Oil Company, The: *See—*
Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., 4,543,407, Cl. 528-336.000.
Stanley, William W.; and Mikyska, Glenn E., to Cymatics, Inc. Electric control circuit. 4,543,493, Cl. 307-126.000.
Stapp, Paul R., to Phillips Petroleum Company. Viscosity enhancement system. 4,542,789, Cl. 166-274.000.
Stauber, Philippe: *See—*
Burckhardt, Christophe W.; Fournier, Jacques; and Stauber, Philippe, 4,543,526, Cl. 324-61.00R.
Stauffer Chemical Company: *See—*
Brotsky, Eugene, 4,543,260, Cl. 426-266.000.
Stavlo, Lars G., to AGA AB. Delivery system and method for pressurized gas. 4,542,774, Cl. 141-1.000.
Stawicki, Robert J., to BOC Group, Inc., The. Method for bleaching wood pulp including dissolving oxygen into the dilution water of an extraction stage. 4,543,155, Cl. 162-57.000.
Steffen, Peter: *See—*
Hellwege, Dieter; Steffen, Peter; and Waldhelm, Wolfgang, 4,543,582, Cl. 343-710.000.
Stein, Marcel, to Marbor Engineering Associates. Valve ring arrangements in metallic valves, control valves, condensate removal devices, and other means for the prevention of leakages due to corrosion. 4,542,879, Cl. 251-360.000.
Steinberg, Janee D.: *See—*
Winkelman, Jeffry; and Steinberg, Janee D., 4,542,742, Cl. 128-325.000.
Steinhart, Paul: *See—*
Czermak, Ladislaus; Steinhart, Winfried; Binder, Karl-Franz; and Steinhart, Paul, 4,543,033, Cl. 414-732.000.
Steinhart, Winfried: *See—*
Czermak, Ladislaus; Steinhart, Winfried; Binder, Karl-Franz; and Steinhart, Paul, 4,543,033, Cl. 414-732.000.
Stendel, Wilhelm: *See—*
von Bittera, Miklos; Federmann, Manfred; von Gizycki, Ulrich; Schapel, Dietmar; Stendel, Wilhelm; Voege, Herbert; and Dorn, Hubert, 4,543,247, Cl. 424-14.000.
Stenner, John W., to Kurt H. Volk, Inc. Method of making direct mail article with reply envelope and detachable reply devices visible within reply envelope. 4,543,082, Cl. 493-216.000.
Steppacher, Paul A. Filter plate. 4,543,187, Cl. 210-232.000.
Sterling, John D., Jr.: *See—*
Bartlett, Philip L.; Daly, John J., Jr.; and Sterling, John D., Jr., 4,543,202, Cl. 252-305.000.
Stetter GmbH: *See—*
Riker, Rudolf, 4,543,180, Cl. 209-44.000.
Stevens, Garry B. Apparatus for insulated building block. 4,543,052, Cl. 425-110.000.
Stewart, Robert T., Jr.: *See—*
Bittner, John R.; Billing, Ralph S.; and Stewart, Robert T., Jr., 4,543,002, Cl. 400-212.000.
Stewart, Thomas L.; and Demny, Florian C., to Shell Oil Company. BS&W in crude oil streams. 4,543,191, Cl. 210-746.000.
Stewart, Thomas R.: *See—*
Perez-Tubens, Drucilla M.; and Stewart, Thomas R., 4,542,838, Cl. 223-87.000.
Stoessel, Armin: *See—*
Hartig, Juergen; Stoessel, Armin; Herrmann, Guenter; and Marosi, Laszlo, 4,543,427, Cl. 568-342.000.
Stoltzmann, David E., to United States of America, Army. Wide angle lens for the infrared dedicatory clause. 4,542,954, Cl. 350-1.300.
Strack, Helmut; and Tihanyi, Jeno , to Siemens Aktiengesellschaft. Insulated-gate field-effect transistor (IGFET) with injector zone. 4,543,596, Cl. 357-23.400.
Stracke, Wilfried: *See—*
Elter, Claus; Noll, Gerhard; Schoening, Josef; Schwiers, Hans-Georg; and Stracke, Wilfried, 4,543,232, Cl. 376-289.000.
Streckert, Holger H.: *See—*
Ellis, Arthur B.; and Streckert, Holger H., 4,543,511, Cl. 315-169.300.
Streeter, Bert E.; and Robinson, Larry G. Display sign including changeable numeral characters. 4,542,603, Cl. 40-447.000.
Stringfellow, Dale A.; and Fast, Patricia E., to Upjohn Company, The. Method for immunoregulation with 6-aryl pyrimidine compounds. 4,543,248, Cl. 514-272.000.
Stromberg, Rolf. Image-stabilized optical instrument, such as telescope and cameras. 4,542,962, Cl. 350-500.000.
Stromquist, Donald M. Method and apparatus for conveying slurry explosives. 4,542,941, Cl. 299-12.000.
Studt, William L.: *See—*
Kuhla, Donald E.; Campbell, Henry F.; and Studt, William L., 4,543,352, Cl. 514-212.000.
Sturtz, Gregory P.: *See—*
Stamerjohn, David M.; Norton, Richard V.; and Sturtz, Gregory P., 4,543,163, Cl. 203-37.000.
Subsara, William P.; and Levonius, Michael R., to Gam Rad, Inc. Ion responsive probe. 4,543,175, Cl. 204-400.000.
Sudo, Fumio; Fujii, Tetsuya; Kato, Yoshiei; Yamada, Sumio; and Emoto, Kanji, to Kawasaki Steel Corporation. Process of making steel in converter using a great amount of iron-bearing cold material. 4,543,125, Cl. 75-51.500.
Suehiro, Hiroshi: *See—*
Kozima, Yasuyuki; Sato, Kunio; Tadauchi, Masaharu; Suehiro, Hiroshi; and Inoue, Yasuo, 4,543,644, Cl. 364-900.000.
Suenaga, Takashi: *See—*
Aramaki, Minoru; Kobayashi, Yoshiyuki; Nakamura, Tamio; Nakano, Hisaji; and Suenaga, Takashi, 4,543,242, Cl. 423-406.000.
Sugano, Shunji; Hagiwara, Koichi; Miura, Isao; and Honto, Akira, to Negami Chemical Industrial Co., Ltd.; and Toshiba Silicone Co., Ltd. Primer composition. 4,543,404, Cl. 528-26.000.
Suganuma, Takashi: *See—*
Chiba, Tomosuke; Kato, Hiroshi; and Suganuma, Takashi, 4,543,510, Cl. 313-477.00R.
Sugawara, Syohel: *See—*
Takagi, Akihiro; Yamada, Shinichi; and Sugawara, Syohel, 4,543,574, Cl. 340-825.500.
Sugimoto, Hachiro: *See—*
Kaneko, Takeru; Ozaki, Satoru; Takizawa, Kimie; and Sugimoto, Hachiro, 4,543,254, Cl. 514-253.000.
Sugita, Junkichi; and Yada, Hiroaki, to Sony Corporation. Digital data detecting apparatus. 4,543,531, Cl. 329-50.000.
Sugiura, Yoichi: *See—*
Kobayashi, Nobuyuki; Ito, Hiroshi; and Sugiura, Yoichi, 4,543,634, Cl. 364-431.070.
Sugiyama, Makoto: *See—*
Yoshinari, Osamu; Sugiyama, Makoto; and Nakai, Hideki, 4,543,241, Cl. 423-447.700.
Suhara, Akito; Takasugi, Kazuhiko; Sato, Toshihide; Ono, Masashi; Higuchi, Kazuo; and Chiba, Tatsuya, to Ube Industries, Ltd.; and Nissan Motor Company, Ltd. Polyamide composition. 4,543,378, Cl. 524-100.000.
Suhr, Olaf: *See—*
Gawer, Klaus-Peter; and Suhr, Olaf, 4,542,766, Cl. 137-559.000.
Sukenik, Robert J., to Corrugating Roll Corporation. Corrugating roller. 4,542,566, Cl. 29-125.000.
Sullivan, Woodard R. Rear axle bearing puller. 4,542,571, Cl. 29-256.000.
Sulzer Brothers Limited: *See—*
Julich, Werner, 4,542,769, Cl. 139-66.00R.
Sumitomo Chemical Company, Limited: *See—*
Ishizumi, Kikuo; Antoku, Fujio; and Asami, Yukio, 4,543,355, Cl. 514-253.000.
Sumitomo Heavy Industries, Ltd.: *See—*
Kato, Hisanori; and Okawa, Masao, 4,542,660, Cl. 74-27.000.
Suncast Corporation: *See—*
Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,542,938, Cl. 297-445.000.
Sundstrand Corporation: *See—*
Reynolds, Richard W., 4,542,722, Cl. 123-179.00E.
Shepler, John E., 4,543,496, Cl. 307-261.000.
Sundstrand Data Control, Inc.: *See—*
Molnar, Daniel O., 4,542,647, Cl. 73-151.000.
Superior Graphite Co.: *See—*
Goldberger, William M., 4,543,240, Cl. 423-346.000.
Sutkin, Seymour: *See—*
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Suzuki, Hidetaka: *See—*
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Suzuki, Hiroshi: *See—*
Kasahara, Hideo; Suzuki, Hiroshi; and Umeda, Noriaki, 4,543,392, Cl. 525-90.000.
Suzuki, Kenji: *See—*
Shiota, Kazuo; Suzuki, Kenji; and Fukui, Takashi, 4,542,984, Cl. 355-68.000.
Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Motor controlling switch device. 4,543,515, Cl. 318-293.000.
Suzuki, Masatoshi: *See—*
Harada, Takashi; Kobayashi, Akio; Honda, Masakazu; Harada, Susumu; Fujimoto, Masaya; and Suzuki, Masatoshi, 4,543,176, Cl. 204-406.000.
Suzuki, Ryoichi; and Tokuda, Ryuji, to Canon Kabushiki Kaisha. Shutter release device. 4,542,970, Cl. 354-400.000.
Suzuki, Satoshi: *See—*
Ozawa, Naoki; Nagahara, Shusaku; Takahashi, Kenji; Takemoto, Iwao; Nishizawa, Shigeki; Sato, Masanori; and Suzuki, Satoshi, 4,543,610, Cl. 358-213.000.
Suzuki, Tadaaki: *See—*
Matsunaga, Shigeo; Iizuka, Yoshio; and Suzuki, Tadaaki, 4,543,612, Cl. 358-261.000.
Suzuki, Tadashi: *See—*
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Suzuki, Taihei: *See—*
Amada, Eiichi; Kuwahara, Hiroshi; Shirasu, Hirotoshi; Suzuki, Taihei; and Morita, Takashi, 4,543,652, Cl. 370-66.000.
Suzuki, Toshiyuki; and Tsukakoshi, Hiroshi. High speed plating apparatus. 4,543,172, Cl. 204-224.00R.
Suzuki, Yuji: *See—*
Urata, Koichi; Takaishi, Naotake; Inamoto, Yoshiaki; and Suzuki, Yuji, 4,543,258, Cl. 514-772.000.
Swearingen, Loren L.: *See—*
Treybig, Duane S.; and Swearingen, Loren L., 4,543,388, Cl. 524-597.000.
Swingline, Inc.: *See—*
Olesen, Paul; Lensky, Albert; and Pendzich, Richard J., 4,542,844, Cl. 227-7.000.
Switsen, Henry N. Video tape recorder R.F. signal processor. 4,543,608, Cl. 358-153.000.

Syntex (U.S.A.) Inc.: *See—*
Gallop, Paul M.; and Korb, Donald R., 4,543,371, Cl. 523-106.000.
Synthese Et Creation: *See—*
Thomas, Jacques; and Raval, Claude, 4,542,825, Cl. 206-363.000.
Szabo, Sandor P.: *See—*
Joo, Istvan; Schutz, Lajos; Sarosi, Jozsef; Szabo, Sandor P.; Taal, Janos; and Szebenyi, Otto , 4,543,635, Cl. 364-474.000.
Szafranski, Brian D.: *See—*
Ackley, Mark W.; and Szafranski, Brian D., 4,543,112, Cl. 55-316.000.
Szebenyi, Otto : *See—*
Joo, Istvan; Schutz, Lajos; Sarosi, Jozsef; Szabo, Sandor P.; Taal, Janos; and Szebenyi, Otto , 4,543,635, Cl. 364-474.000.
Taal, Janos: *See—*
Joo, Istvan; Schutz, Lajos; Sarosi, Jozsef; Szabo, Sandor P.; Taal, Janos; and Szebenyi, Otto , 4,543,635, Cl. 364-474.000.
Tabak, Samuel A.: *See—*
Gould, Ronald M.; and Tabak, Samuel A., 4,543,435, Cl. 585-330.000.
Tachibana, Akira; Fujiki, Norio; Endo, Hiroshi; Yamaki, Kiyoshi; and Kishi, Norimasa, to Nissan Motor Company, Limited. Moving obstacle detection system for a vehicle. 4,543,577, Cl. 340-904.000.
Tadauchi, Masaharu: *See—*
Kozima, Yasuyuki; Sato, Kunio; Tadauchi, Masaharu; Suehiro, Hiroshi; and Inoue, Yasuo, 4,543,644, Cl. 364-900.000.
Tagliarino, Joseph. Plug for test tee. 4,542,642, Cl. 73-40.50R.
Taguchi, Hiroaki: *See—*
Takase, Akio; Ogawa, Kohji; Tsutsumi, Takao; Yasuda, Yoshinori; and Taguchi, Hiroaki, 4,542,906, Cl. 273-185.00R.
Tahara, Tetsuya: *See—*
Nakao, Toru; Ikebe, Tsuguo; Tahara, Tetsuya; Maruyama, Yutaka; and Yaoka, Osamu, 4,543,354, Cl. 514-238.000.
Taisei Kako Kabushiki Kaisha: *See—*
Kai, Hisao, 4,543,279, Cl. 428-35.000.
Tajima, Hatsuo, to Canon Kabushiki Kaisha. Apparatus for fixing images. 4,542,980, Cl. 355-14.0FU.
Taka, Hideo: *See—*
Yamada, Tateo; Kimura, Hiroyuki; and Taka, Hideo, 4,542,865, Cl. 242-205.000.
Takabe, Noboru: *See—*
Kondo, Tatsuhei; Takabe, Noboru; and Horiba, Takeshi, 4,543,350, Cl. 514-18.000.
Takagi, Akihiro; Yamada, Shinichi; and Sugawara, Syohei, to Nippon Telegraph & Telephone Public Corporation. System for resolving collision in local network. 4,543,574, Cl. 340-825.500.
Takagi, Seiichi: *See—*
Murakawa, Kazunori; Mitsuhashi, Yasuo; Uchide, Hitoshi; Takagi, Seiichi; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; and Imai, Eiichi, 4,543,312, Cl. 430-107.000.
Takagi, Toshio: *See—*
Funabashi, Kiyomi; Kawamura, Fumio; Takagi, Toshio; Urata, Megumu; and Fukasawa, Tetsuo, 4,543,085, Cl. 494-30.000.
Takagiwa, Hiroyuki; Matsuo, Syunji; and Tomono, Makoto, to Konishiroku Photo Industry Co., Ltd. Toner image pressure fixing method. 4,543,311, Cl. 430-98.000.
Takahashi, Katsuaki: *See—*
Mimura, Tomonori; Sagusa, Hisayuki; Satou, Takehide; and Takahashi, Katsuaki, 4,543,238, Cl. 422-63.000.
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, to Bridgestone Tire Co. Ltd.; and Institute of Technology Precision Electrical Discharge Works. Tire manufacturing mold. 4,543,050, Cl. 425-28.00D.
Takahashi, Kenji: *See—*
Ozawa, Naoki; Nagahara, Shusaku; Takahashi, Kenji; Takemoto, Iwao; Nishizawa, Shigeki; Sato, Masanori; and Suzuki, Satoshi, 4,543,610, Cl. 358-213.000.
Takahashi, Norio: *See—*
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Takahashi, Sankichi: *See—*
Okouchi, Isao; Takahashi, Sankichi; Izumi, Kenkichi; Miyai, Masahiko; and Otake, Katsumoto, 4,543,188, Cl. 210-304.000.
Takahashi, Tomonori: *See—*
Matsui, Minoru; and Takahashi, Tomonori, 4,543,346, Cl. 501-120.000.
Takahashi, Yuji, to Canon Kabushiki Kaisha. Sheet conveying device. 4,542,896, Cl. 271-111.000.
Takaishi, Naotake: *See—*
Urata, Koichi; Takaishi, Naotake; Inamoto, Yoshiaki; and Suzuki, Yuji, 4,543,258, Cl. 514-772.000.
Takamizawa, Kinya, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic diagnostic apparatus. 4,542,746, Cl. 128-660.000.
Takara Co., Ltd.: *See—*
Matsuda, Takashi, 4,543,073, Cl. 446-230.000.
Takasaki, Mitsuhiro: *See—*
Murakami, Hiroya; and Takasaki, Mitsuhiro, 4,543,071, Cl. 445-66.000.
Takase, Akio; Ogawa, Kohji; Tsutsumi, Takao; Yasuda, Yoshinori; and Taguchi, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha. Computer aided golf training device. 4,542,906, Cl. 273-185.00R.
Takasugi, Kazuhiko: *See—*
Suhara, Akito; Takasugi, Kazuhiko; Sato, Toshihide; Ono, Masashi; Higuchi, Kazuo; and Chiba, Tatsuya, 4,543,378, Cl. 524-100.000.
Takayanagi, Takashi: *See—*
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Takeda, Hiroaki: *See—*
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Takemoto, Iwao: *See—*
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Takeshita, Ritsuji: *See—*
Seki, Kunio; and Takeshita, Ritsuji, 4,543,539, Cl. 330-297.000.
Takeuchi, Bunzi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for scribing semiconductor wafer with laser beam. 4,543,464, Cl. 219-121.0LH.
Takeuchi, Hiroo, to Nissan Kogyo Kabushiki Kaisha. Vacuum booster device. 4,542,680, Cl. 91-369.00A.
Takeya, Yasuo: *See—*
Hirooka, Hiroshi; Yoshida, Yoshio; Fukushi, Toshio; and Takeya, Yasuo, 4,542,633, Cl. 68-12.00R.
Takizawa, Kimie: *See—*
Kaneko, Takeru; Ozaki, Satoru; Takizawa, Kimie; and Sugimoto, Hachiro, 4,543,254, Cl. 514-253.000.
Talbot, Marie L. C. Egg cracking device. 4,542,584, Cl. 30-120.100.
Tallard, Gilbert R. Underground leachate barrier and method of making same. 4,543,016, Cl. 405-267.000.
Tamura, Katsumi: *See—*
Fuyama, Moriaki; Tamura, Katsumi; Morijiri, Makoto; Sawahata, Mamoru; and Hachino, Hiroaki, 4,543,573, Cl. 340-781.000.
Tamura, Naoyuki: *See—*
Sato, Kazuo; Yamaguchi, Sumio; Kato, Shigeo; Matsumura, Yasuhide; Mizumoto, Muneo; Okuno, Sumio; and Tamura, Naoyuki, 4,542,712, Cl. 118-726.000.
Tan, Kok K., to Everbloom Mushrooms. Mushroom cultivation. 4,542,608, Cl. 47-1.100.
Tanabe, Hideo: *See—*
Kumada, Masaharu; Tanabe, Hideo; Yuhara, Katsuo; Misumi, Akira; and Kawasaki, Hiroshi, 4,543,441, Cl. 136-249.000.
Tanaka, Haruto; Yamaki, Kiyoshi; and Suzuki, Hidetaka, to Nissan Motor Company, Limited. Road map display system with indications of a vehicle position and destination. 4,543,572, Cl. 340-723.000.
Tanaka, Hideyo; and Harada, Mineo, to Hitachi, Ltd. Serial printer with dot matrix type print head. 4,543,001, Cl. 400-212.000.
Tanaka, Masayuki; Morioka, Katsuharu; and Kishimoto, Akihiko, to Toray Industries, Inc. Antistatic resinous compositions. 4,543,390, Cl. 525-63.000.
Tanaka, Osamu; Nakashima, Shozaburo; Nagano, Takashi; Kumano, Tomoji; and Hiromae, Yoshitaka, to Nippon Steel Corporation. Process for producing grain-oriented electrical steel sheet having both improved magnetic properties and properties of glass film. 4,543,134, Cl. 148-113.000.
Tanaka, Seizou, to Nippon Seiki Kabushiki Kaisha. Antireverse means for an odometer. 4,543,475, Cl. 235-96.000.
Tanaka, Takumi: *See—*
Arai, Yoshihiro; and Tanaka, Takumi, 4,543,396, Cl. 525-440.000.
Tanaka, Yoshikazu: *See—*
Yamamuro, Sigeaki; Kumura, Haruyoshi; Tanaka, Yoshikazu; Abo, Keiju; and Hirano, Hiroyuki, 4,542,665, Cl. 74-866.000.
Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, 4,543,077, Cl. 474-12.000.
Tangorra, Giorgio, to Industrie Pirelli S.p.A. Driving belt. 4,543,080, Cl. 474-204.000.
Taniguchi, Shinya: *See—*
Nagasawa, Shiro; Morimoto, Naruaki; Fujimura, Toshio; Itoh, Masayuki; and Taniguchi, Shinya, 4,542,730, Cl. 123-489.000.
Tarumi, Noriyoshi; Kimura, Kiyoshi; and Gunji, Kouichi, to Konishiroku Photo Industry Co., Ltd. Image reproducing apparatus with high-speed transfer mechanism. 4,542,978, Cl. 355-3.0TR.
Tateoka, Masamichi; Asano, Junichi; Kurata, Mitsuru; and Yokomizo, Yoshikazu, to Canon Kabushiki Kaisha. Original reading device. 4,543,491, Cl. 250-578.000.
Taylor, Douglas R.; and Pearce, David W., to Marconi Avionics Limited. Inductive coupler systems. 4,543,556, Cl. 336-210.000.
Taylor, James C.: *See—*
Hamlin, Humphrey A. S.; and Taylor, James C., 4,543,109, Cl. 55-25.000.
Taylor, Lloyd D.: *See—*
Mehta, Avinash C.; and Taylor, Lloyd D., 4,543,317, Cl. 430-219.000.
Taylor, Richard J.; Kellar, Paul R. N.; and Greenhalgh, Stephen P., to Quantel Limited. Video processors. 4,543,607, Cl. 358-140.000.
Taylor, Scott L.: *See—*
Bennett, John A.; and Taylor, Scott L., 4,542,550, Cl. 15-3.000.
Tayot, Jean L.; and Veron, Jean L. B., to Institut Merieux. Process for preparing globin from haemoglobin and globin obtained by this process. 4,543,209, Cl. 260-112.00B.
Tazaki, Shigemitsu; and Kyogoku, Hiroshi, to Canon Kabushiki Kaisha. Electronic apparatus with printer. 4,543,590, Cl. 346-140.00R.
Technicare Corporation: *See—*
Oakley, Clyde G.; Guess, Joe F.; Robbins, Cheston W.; Kelly, Robert M.; Skaar, Dean N.; and Walker, Stephen D., 4,542,745, Cl. 252-312.000.
Technicon Instruments Corporation: *See—*
Klotzsch, Sigrid G.; and Vadaszy, Richard, 4,543,337, Cl. 436-108.000.
Technion Research & Development Foundation Limited: *See—*
Etsion, Izhak, 4,543,037, Cl. 415-90.000.
Techniservice Division, Textured Yarn Company: *See—*
Schwartz, Nathan G., 4,542,619, Cl. 57-210.000.

Teijin Limited: *See*—
Kato, Yoshinori; Umemoto, Naoji; Hara, Takeshi; Tsukada, Yutaka; and Hirai, Hidematsu, 4,543,211, Cl. 260-112.00B.

Teknar, Inc.: *See*—
Head, Kenneth O.; and Bollinger, Arthur E., 4,543,649, Cl. 367-96.000.

Teledyne Industries, Inc.: *See*—
Allen, Kenneth D.; Brogdon, James W.; Barton, John S.; and Hicks, Raymond J., 4,542,658, Cl. 73-862.310.
Wilkinson, Ronald E., 4,542,719, Cl. 123-41.350.

Telefunken electronic GmbH: *See*—
Rasch, Klaus-Dieter; and Flodl, Helmut, 4,543,444, Cl. 136-256.000.

Temes, Gabor C.; and Martin, Kenneth W., to Regeants of University of Calif., The. Offset compensated switched capacitor circuits. 4,543,534, Cl. 330-9.000.

Temp Badge Security Systems, Inc.: *See*—
Haas, David J., 4,542,982, Cl. 355-40.000.

Temp Tech, Inc.: *See*—
Anderson, John W., 4,543,471, Cl. 219-387.000.

Tenneco Polymers, Inc.: *See*—
Park, Im K., 4,543,289, Cl. 428-304.400.

Teradata Corporation: *See*—
Neches, Philip M., 4,543,630, Cl. 364-200.000.

Teramachi, Hiroshi. Rotary-to-linear converter with rolling balls, and two-speed feed mechanism incorporating the same. 4,542,661, Cl. 74-424.8NA.

Teramoto, Yoshikichi: *See*—
Nakamura, Ken'ichi; Sakagami, Teruo; Teramoto, Yoshikichi; and Obara, Hiroshi, 4,543,293, Cl. 428-421.000.

Terasawa, Koji, to Canon Kabushiki Kaisha. Capping device for ink jet nozzle. 4,543,589, Cl. 346-140.00R.

Terasawa, Koji, to Canon Kabushiki Kaisha. Suction recovery apparatus. 4,543,591, Cl. 346-140.00R.

Teru Hoshino: *See*—
Hoshino, Fumihiko; Yamaguchi, Takahiro; Abe, Nobuyuki; Watabe, Nobuyuki; Katzukura, Yoshiteru; Hoshino, Tadahiko; Utsumi, Yoko; and Kuroda, Yoko, 4,543,259, Cl. 424-116.000.

Tesa S.A.: *See*—
Burckhardt, Christophe W.; Fournier, Jacques; and Stauber, Philippe, 4,543,526, Cl. 324-61.00R.

Teshima, Hiromi: *See*—
Itagaki, Takaharu; Ito, Tsuyoshi; Ando, Kiyoto; and Teshima, Hiromi, 4,543,365, Cl. 521-53.000.

Teshirogi, Tasuku, to Radio Research Laboratories, Ministry of Posts and Telecommunications. Circular polarization antenna. 4,543,579, Cl. 343-365.000.

Tetrahedron Associates, Inc.: *See*—
Noto, Vincent H.; and Yalof, Stanley, 4,543,147, Cl. 156-288.000.

Tewes, Udo; and Roeschlein, Rolf, to Nixdorf Computer AG. Circuit carrier connector. 4,542,949, Cl. 339-75.00M.

Texaco Inc.: *See*—
Knifton, John F.; and Alexander, David C., 4,543,411, Cl. 544-178.000.
Kuntschik, Lawrence F.; and Dowe, Claudia L., 4,543,199, Cl. 252-75.000.
Mims, Donald S.; and Frazier, Terry L., 4,542,993, Cl. 374-42.000.

Texas Instruments Incorporated: *See*—
Berdanier, Barry N., 4,542,986, Cl. 356-5.000.
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,543,500, Cl. 307-530.000.
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,543,501, Cl. 307-530.000.

Textron Inc.: *See*—
Murphy, Milford R.; and Haskins, Delbert E., 4,542,679, Cl. 91-363.00A.

Thayer, David N.: *See*—
Lloyd, Harry J., Jr.; Huggins, Hoyt W.; Lyon, Michael R.; Thayer, David N.; and McGovney, William E., 4,542,808, Cl. 186-56.000.

Thermocell Development, Ltd.: *See*—
Smith, Stuart B., 4,543,366, Cl. 521-78.000.

Thielemann, Klaus; and Trabandt, Hagen, to Continental Gummi-Werke Aktiengesellschaft. Tread for pneumatic vehicle tires. 4,542,778, Cl. 132-209.00R.

Thilo, Peer: *See*—
Oberstein, Karla; and Thilo, Peer, 4,543,565, Cl. 340-506.000.

Thobe, Nicholas D.: *See*—
Luebrecht, Donald; and Thobe, Nicholas D., 4,543,031, Cl. 414-631.000.

Thoese, Klaus, to Hoechst Aktiengesellschaft. Plastic film. 4,543,285, Cl. 428-201.000.

Thoese, Klaus, to Hoechst Aktiengesellschaft. Drafting material. 4,543,316, Cl. 430-162.000.

Thoma, Wilhelm; Nachtkamp, Klaus; Schroer, Walter; and Langel, Rolf, to Bayer Aktiengesellschaft. Aqueous polyurethane compositions containing crosslinking agents and their use for heat-active one-coat reverse coating. 4,543,144, Cl. 156-230.000.

Thomas, Alan F.: *See*—
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre, 4,543,429, Cl. 568-446.000.

Thomas & Betts Corporation: *See*—
Fortsch, William A., 4,542,871, Cl. 248-73.000.

Thomas, Jacques; and Raval, Claude, to Synthese Et Creation. Packaging and handling device for an item that is to remain protected from any direct manual contact, and set including such a device and such and item. 4,542,825, Cl. 206-363.000.

Thomas, William L., III: *See*—
Melton, Donald L.; and Thomas, William L., III, 4,542,897, Cl. 272-73.000.

Thompson, Callie R.: *See*—
Clause, Marvin B., Jr.; and Thompson, Callie R., 4,542,893, Cl. 270-52.500.

Thomson-CSF: *See*—
Coutures, Jean-Louis, 4,543,640, Cl. 364-604.000.
Dubois, Jean C.; Tourillon, Gerard; and Garnier, Francis, 4,543,306, Cl. 429-194.000.
Graindorge, Philippe; and Arditty, Herve , 4,542,955, Cl. 350-3.630.
Huignard, Jean Pierre; and LeDu, Bertrand, 4,543,662, Cl. 455-600.000.
Moreau, Jean M., 4,543,522, Cl. 323-303.000.

Thorn EMI Ferguson Limited: *See*—
Brooks, David, 4,543,616, Cl. 358-335.000.

Thorn Emi Gas Appliances Limited: *See*—
Smith, Kenneth G.; and Collings, John, 4,542,735, Cl. 126-129.000.

Thornblom, Jan: *See*—
Santen, Sven; Mogensen, Palne; Kaij, Mats; and Thornblom, Jan, 4,543,470, Cl. 219-383.000.

Thornton, Douglas M.; and Mathis, Logan H., to Ross Operating Valve Company. Monitor for double safety valves. 4,542,767, Cl. 137-596.160.

Thorpe, J. Derle: *See*—
Richardson, Gary H.; and Thorpe, J. Derle, 4,542,645, Cl. 73-64.100.

Thunder Bay Northland Machinery Inc.: *See*—
Berglund, Norman, 4,543,179, Cl. 209-30.000.

Thut, Robert S.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,543,156, Cl. 162-101.000.

Tihanyi, Jeno : *See*—
Strack, Helmut; and Tihanyi, Jeno , 4,543,596, Cl. 357-23.400.

Tilly, Adolphe J. G., to Conma, N.V. Method of controlling the fuel supply and burner for liquid fuel. 4,543,055, Cl. 431-12.000.

Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, to Suncast Corporation. Flexible chair. 4,542,938, Cl. 297-445.000.

Tisbo, Thomas A.: *See*—
Tisbo, Cosmo N.; Tisbo, Thomas A.; Recker, Richard D.; and Heggeland, Bruce, 4,542,938, Cl. 297-445.000.

Tlaker, Erich, to Fellows Corporation. Automatic calibration of sensor circuits in gear shapers. 4,542,638, Cl. 73-1.00R.

Toho Beslon Co., Ltd.: *See*—
Yoshinari, Osamu; Sugiyama, Makoto; and Nakai, Hideki, 4,543,241, Cl. 423-447.700.

Tokiguchi, Katsumi: *See*—
Sakudo, Noriyuki; Abe, Katsunobu; Tokiguchi, Katsumi; Koike, Hidemi; and Okada, Osami, 4,543,465, Cl. 219-121.0PD.

Toko Yakuhin Industry Co., Ltd.: *See*—
Kamishita, Takuzo, 4,543,251, Cl. 424-81.000.

Tokuda, Ryuji: *See*—
Suzuki, Ryoichi; and Tokuda, Ryuji, 4,542,970, Cl. 354-400.000.

Tokyo Denshi Kagaku Co., Ltd.: *See*—
Nakayama, Muneo, 4,542,710, Cl. 118-52.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Fujita, Katsuji, 4,543,593, Cl. 357-48.000.
Gupta, Nand K., 4,543,490, Cl. 250-578.000.
Harada, Nozomu; Endo, Yukio; Yoshida, Okio; and Matsunaga, Yoshiyuki, 4,543,489, Cl. 250-578.000.
Harada, Nozomu; and Yoshida, Okio, 4,543,601, Cl. 358-213.000.
Hasegawa, Masumi, 4,543,046, Cl. 418-63.000.
Hasegawa, Masumi, 4,543,047, Cl. 418-63.000.
Horie, Hiromichi; Morita, Mikio; and Arima, Itsuo, 4,543,208, Cl. 252-62.540.
Inokuchi, Haruhisa; and Sakai, Takami, 4,543,492, Cl. 307-82.000.
Maeda, Ken-ichi, 4,543,660, Cl. 382-34.000.
Nakasuji, Mamoru; and Wada, Hirotsugu, 4,543,512, Cl. 315-382.000.
Ozaki, Takayuki, 4,543,659, Cl. 382-8.000.
Shibata, Tadashi, 4,543,597, Cl. 357-23.600.
Shikata, Hiroshi, 4,543,019, Cl. 408-57.000.
Shirata, Shigenobu; and Kurihara, Kiyoshi, 4,543,567, Cl. 340-519.000.
Takamizawa, Kinya, 4,542,746, Cl. 128-660.000.
Takeuchi, Bunzi, 4,543,464, Cl. 219-121.0LH.

Toma, Shouji: *See*—
Matsui, Shigetomo; Atsuta, Toshio; and Toma, Shouji, 4,542,846, Cl. 228-112.000.

Tome, Frederick C., Jr.: *See*—
Shaffer, Jacob E., Jr.; Reier, John C.; and Tome, Frederick C., Jr., 4,543,468, Cl. 219-279.000.

Tomihashi, Nobuyuki: *See*—
Ishiwari, Kazuo; Ohmori, Akira; Tomihashi, Nobuyuki; Yuhara, Sumiko; Kaino, Toshikuni; Jinguji, Kaname; and Nara, Shigeo, 4,542,957, Cl. 350-96.340.

Tomlinson, Ronald S.: *See*—
Trent, Bryan O.; and Tomlinson, Ronald S., 4,542,734, Cl. 126-110.00R.

Tomono, Kunisaburo: *See*—
Mandai, Harufumi; and Tomono, Kunisaburo, 4,543,553, Cl. 336-83.000.

Tomono, Makoto: *See*—
Takagiwa, Hiroyuki; Matsuo, Syunji; and Tomono, Makoto, 4,543,311, Cl. 430-98.000.
Tomoyori, Makoto; and Fuse, Masashi, to Alps Electric Co., Ltd. Course guidance and display apparatus for vehicles. 4,543,578, Cl. 340-995.000.
Tomsa, Vladimir, to Allied Corporation. Electrical connector assembly having locking means. 4,542,952, Cl. 339-90.00R.
Tone, Junsuke: *See*—
Celmer, Walter D.; Cullen, Walter P.; Maeda, Hiroshi; and Tone, Junsuke, 4,543,334, Cl. 435-253.000.
Tooka, Takuzo; Nozaki, Choji; Hasegawa, Junzo; Kawabata, Susumu; Niimi, Hiroshi; Yamaoka, Yoshiaki; Goto, Hiroaki; and Miura, Yasuhiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Pre-opening device for a carding machine. 4,542,560, Cl. 19-98.000.
Topert, Michael: *See*—
Daum, Joachim; Siewert, Gerhard; Topert, Michael; and Seliger, Hartmut, 4,543,329, Cl. 435-69.000.
Toray Industries, Inc.: *See*—
Tanaka, Masayuki; Morioka, Katsuharu; and Kishimoto, Akihiko, 4,543,390, Cl. 525-63.000.
Torii, Akio: *See*—
Edamura, Kohji; Torii, Akio; Hattori, Katsuhide; and Sakai, Hiroshi, 4,543,136, Cl. 149-21.000.
Edamura, Koji; Torii, Akio; Sato, Kazuyuki; and Sakai, Hiroshi, 4,543,137, Cl. 149-21.000.
Torrence, Robert J.: *See*—
Orth, Charles D.; and Torrence, Robert J., 4,542,852, Cl. 236-92.00B.
Toshiba Silicone Co., Ltd.: *See*—
Sugano, Shunji; Hagiwara, Koichi; Miura, Isao; and Honto, Akira, 4,543,404, Cl. 528-26.000.
'totes' incorporated: *See*—
Allen, James H., 4,542,824, Cl. 206-287.100.
Phillips, Bradford E., 4,542,757, Cl. 135-16.000.
Tourillon, Gerard: *See*—
Dubois, Jean C.; Tourillon, Gerard; and Garnier, Francis, 4,543,306, Cl. 429-194.000.
Towers, Edward F.: *See*—
Bilbrey, Robert A.; and Koball, Bruce R., 4,543,571, Cl. 340-710.000.
Towfiq, Farhad: *See*—
Barnes, Casper W.; and Towfiq, Farhad, 4,542,744, Cl. 128-660.000.
Toyoda Gosei Co., Ltd.: *See*—
Kai, Tooru; and Hayashi, Chikahisa, 4,543,602, Cl. 358-106.000.
Toyoda, Ippei: *See*—
Hikawa, Masanori; and Toyoda, Ippei, 4,543,119, Cl. 71-90.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Noda, Shigeo; Yamashita, Yasuhiro; and Imamura, Kosei, 4,543,636, Cl. 364-474.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Itou, Zyouzi, 4,542,851, Cl. 236-44.00C.
Kobayashi, Nobuyuki; Ito, Hiroshi; and Sugiura, Yoichi, 4,543,634, Cl. 364-431.070.
Toyotomi Kogyo Co., Ltd.: *See*—
Nakamura, Kazuharu; Matsumoto, Motoki; and Yoshino, Tooru, 4,543,057, Cl. 431-208.000.
Trabandt, Hagen: *See*—
Thielemann, Klaus; and Trabandt, Hagen, 4,542,778, Cl. 152-209.00R.
Transensory Devices, Inc.: *See*—
Petersen, Kurt E.; Allen, Henry V.; and Knutti, James W., 4,543,457, Cl. 200-83.00N.
Transnuklear GmbH: *See*—
Diem, Hans, 4,543,488, Cl. 250-507.100.
Traynor, Lee, to B. F. Goodrich Company, The. Electrically conductive pyrrole polymers. 4,543,402, Cl. 526-258.000.
Treber, Willi O.; and Fritsch, Gunter, to Gebr. Happich GmbH. Decorative or protective molding for a vehicle body. 4,542,926, Cl. 293-128.000.
Trent, Bryan O.; and Tomlinson, Ronald S., to Heil-Quaker Corporation. High efficiency furnace with secondary heat exchanger. 4,542,734, Cl. 126-110.00R.
Treybig, Duane S.; and Swearingen, Loren L., to Dow Chemical Company, The. Thermosettable polymers or prepolymers prepared from polymethylated pyrazines and aromatic polyaldehydes and cured products therefrom. 4,543,388, Cl. 524-597.000.
Troesch, Juerg; and Portmann, Walter, to Sandoz Ltd. Fillers dyed with polycationic dyestuffs useful for coloring paper and non-woven fabrics. 4,543,128, Cl. 106-23.000.
Troesch, Jurg, to Sandoz Ltd. Method of dyeing a glass substrate with a polycationic dyestuff. 4,543,103, Cl. 8-523.000.
Trolle, Sten. Apparatus for sorting packagings such as cans based on the material thereof. 4,542,689, Cl. 100-215.000.
Troncoso, Vincent F. Compound archery bow assembly. 4,542,732, Cl. 124-24.00R.
TRW Automotive Products, Inc.: *See*—
Befort, Horst U., 4,542,563, Cl. 24-641.000.
Tsuchida, Michinori; Shimizu, Toshihide; Kaneko, Ichiro; and Abe, Tokuji, to Shin-Etsu Chemical Co., Ltd. Plastic magnets impregnated with a dye-coated magnet alloy powder. 4,543,382, Cl. 524-267.000.
Tsuchiya, Yasuyuki: *See*—
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,543,406, Cl. 528-111.500.
Tsukada, Yutaka: *See*—
Kato, Yoshinori; Umemoto, Naoji; Hara, Takeshi; Tsukada, Yutaka; and Hirai, Hidematsu, 4,543,211, Cl. 260-112.00B.
Tsukakoshi, Hiroshi: *See*—
Suzuki, Toshiyuki; and Tsukakoshi, Hiroshi, 4,543,172, Cl. 204-224.00R.
Tsukamura, Takao, to Nittetsu Steel Drum Co., Ltd. Metal containers - their manufacturing methods. 4,543,025, Cl. 413-6.000.
Tsunakawa, Shoji, to Original Electric Mfg. Co., Ltd. Relay assemblage and a method of forming same. 4,542,582, Cl. 29-622.000.
Tsutsumi, Takao: *See*—
Takase, Akio; Ogawa, Kohji; Tsutsumi, Takao; Yasuda, Yoshinori; and Taguchi, Hiroaki, 4,542,906, Cl. 273-185.00R.
Turner, Donald R., to Williams Industries, Inc. Thermostat cover. 4,543,445, Cl. 174-5.00R.
Ube Industries, Ltd.: *See*—
Suhara, Akito; Takasugi, Kazuhiko; Sato, Toshihide; Ono, Masashi; Higuchi, Kazuo; and Chiba, Tatsuya, 4,543,378, Cl. 524-100.000.
Uchide, Hitoshi: *See*—
Murakawa, Kazunori; Mitsuhashi, Yasuo; Uchide, Hitoshi; Takagi, Seiichi; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; and Imai, Eiichi, 4,543,312, Cl. 430-107.000.
Uchiyama, Katsuji: *See*—
Karasawa, Tadayoshi; Kawano, Katsumi; Uchiyama, Katsuji; and Yamazaki, Michio, 4,543,197, Cl. 252-62.560.
Uchiyama, Masaki: *See*—
Murakawa, Kazunori; Mitsuhashi, Yasuo; Uchide, Hitoshi; Takagi, Seiichi; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; and Imai, Eiichi, 4,543,312, Cl. 430-107.000.
Ueda, Ikuo; Kato, Masayuki; and Nagano, Masanobu, to Fujisawa Pharmaceutical Co., Ltd. Quinazoline derivatives. 4,543,356, Cl. 514-259.000.
Ueno, Kenji: *See*—
Kamogawa, Ninichi; Ueno, Kenji; and Ishii, Kazumi, 4,542,977, Cl. 355-3.0CH.
Uihlein, Robert E.; and Severson, Walter C., to Signs by Severson Rend A Sign, Inc. Apparatus for storing a plurality of signs and automatically displaying said signs at predetermined timed intervals. 4,542,604, Cl. 40-475.000.
Ulrich, Lawrence W.; and Walker, Connie W., to Durable Packaging Corporation. Automatic carton sealing apparatus. 4,542,616, Cl. 53-137.000.
Umeda, Noriaki: *See*—
Kasahara, Hideo; Suzuki, Hiroshi; and Umeda, Noriaki, 4,543,392, Cl. 525-90.000.
Umemoto, Naoji: *See*—
Kato, Yoshinori; Umemoto, Naoji; Hara, Takeshi; Tsukada, Yutaka; and Hirai, Hidematsu, 4,543,211, Cl. 260-112.00B.
Undin, Hans: *See*—
Wiener, Hans; and Undin, Hans, 4,542,668, Cl. 81-355.000.
Union Carbide Corporation: *See*—
Hill, Clifford W., 4,543,461, Cl. 219-75.000.
Jenkins, John M., III; Jones, Russell L.; and Jones, Thomas M., 4,543,399, Cl. 526-70.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Wilkinson, Robert G., 4,543,657, Cl. 375-1.000.
United States Borax & Chemical Corporation: *See*—
Biddulph, Richard H., 4,543,227, Cl. 264-233.000.
United States of America
Army: *See*—
Betts, Robert E.; Crawford, John F.; and Meador, Jacqueline C., 4,542,695, Cl. 102-378.000.
Binder, Michael; Walker, Charles W., Jr.; Petersen, Eric R.; Wade, William L., Jr.; and Gilman, Sol, 4,543,305, Cl. 429-101.000.
Howell, W. Max, 4,542,870, Cl. 244-3.150.
Richey, Earl D., 4,542,819, Cl. 198-584.000.
Rose, Douglas N., 4,543,486, Cl. 250-492.100.
Stoltzmann, David E., 4,542,954, Cl. 350-1.300.
Voigt, H. William, Jr., 4,543,220, Cl. 264-3.00C.
Energy: *See*—
Biermann, Wendell J., 4,542,629, Cl. 62-476.000.
Claytor, Thomas N.; and Karplus, Henry B., 4,542,644, Cl. 73-61.00R.
Grover, Jeffrey M.; and Williams, Luanne S., 4,543,233, Cl. 376-446.000.
Mook, Herbert A., Jr., 4,543,230, Cl. 376-110.000.
Sarkisian, Paul H.; Reimann, Robert C.; and Biermann, Wendell J., 4,542,628, Cl. 62-335.000.
Wei, George C., 4,543,345, Cl. 501-95.000.
Weitl, Frederick L.; and Raymond, Kenneth N., 4,543,213, Cl. 260-239.0BC.
National Aeronautics and Space Administration: *See*—
Alcorn, George E.; Leinkram, Charles Z.; and Okunola, Olatunji, 4,543,442, Cl. 136-255.000.
Gahn, Randall F.; and Hagedorn, Norman H., 4,543,302, Cl. 429-15.000.
Linlor, William I., 4,542,963, Cl. 350-537.000.
Manges, David R., 4,542,858, Cl. 242-54.00R.
St. Clair, Anne K.; and St. Clair, Terry L., 4,543,295, Cl. 428-458.000.
Navy: *See*—
Condell, William J., Jr., 4,543,655, Cl. 372-2.000.
French, Donald M., 4,543,066, Cl. 434-242.000.

Olsen, Ralph A.; and Cuthbertson, Robert H., 4,543,070, Cl. 441-5.000.

U.S. Philips Corporation: *See—*
Brandenburg, Klaus; and Weber, Wendelin, 4,543,004, Cl. 400-649.000.
Defeuilly, Jean P.; and Nguyen-Van-Nguyen, Jean, 4,543,661, Cl. 455-76.000.
Hellwege, Dieter; Steffen, Peter; and Waldhelm, Wolfgang, 4,543,582, Cl. 343-710.000.
Kuhn, Michael H.; Piotrowski, Herbert; and Geppert, Rudolf, 4,543,537, Cl. 330-129.000.
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United Technologies Corporation: *See—*
Berczik, Douglas M.; Brodi, George; and O'Connell, Thomas E., 4,543,132, Cl. 148-11.50F.
Dantowitz, Philip; Balko, Edward N.; and McElroy, James F., 4,543,303, Cl. 429-34.000.
Greene, Walter; and Liebke, William R., 4,542,622, Cl. 60-39.230.
Hovan, Edward J.; and Zimonis, Joseph P., 4,542,623, Cl. 60-226.100.
Lemkey, Franklin D.; and Machlin, Irving, 4,543,235, Cl. 420-443.000.
Meltzer, Leonard A.; and Sutkin, Seymour, 4,543,549, Cl. 333-256.000.
Memmen, Robert L., 4,542,867, Cl. 244-117.00A.
Meyerand, Russell G., Jr.; and Smith, David C., 4,543,484, Cl. 250-423.00P.

Unitika Limited: *See—*
Arai, Yoshihiro; and Tanaka, Takumi, 4,543,396, Cl. 525-440.000.

Universal Supply, Inc.: *See—*
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Park, Duk-Won; and Ryan, Theodore W., 4,542,655, Cl. 73-784.000.

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Hirschfeld, Tomas B., 4,542,987, Cl. 356-44.000.
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Urata, Koichi; Takaishi, Naotake; Inamoto, Yoshiaki; and Suzuki, Yuji, to Kao Corporation. Polyol ether compound, preparation process thereof, and cosmetic composition containing same. 4,543,258, Cl. 514-772.000.

Urata, Megumu: *See—*
Funabashi, Kiyomi; Kawamura, Fumio; Takagi, Toshio; Urata, Megumu; and Fukasawa, Tetsuo, 4,543,085, Cl. 494-30.000.

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Murakawa, Kazunori; Mitsuhashi, Yasuo; Uchide, Hitoshi; Takagi, Seiichi; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; and Imai, Eiichi, 4,543,312, Cl. 430-107.000.

Urban Transportation Development Corporation Ltd.: *See—*
Smith, Roy E., 4,542,699, Cl. 105-99.000.
Smith, Roy E., 4,542,700, Cl. 105-166.000.

Ushio Denki Kabushiki Kaisha: *See—*
Arai, Tetsuji, and Igarashi, Tatsushi, 4,543,472, Cl. 219-411.000.

USM Corporation: *See—*
Markhart, Gary T., 4,542,992, Cl. 366-300.000.
Maxner, Richard B., 4,542,820, Cl. 198-817.000.
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Utah State University Foundation: *See—*
Richardson, Gary H.; and Thorpe, J. Derle, 4,542,645, Cl. 73-64.100.

Utsumi, Yoko: *See—*
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Vacuumatic Limited: *See—*
Day, George W.; and Dalby, Kenneth G., 4,543,658, Cl. 377-8.000.

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Muellenheim, Thomas; and Nilius, Hans-Joachim, 4,543,554, Cl. 336-83.000.

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Vainio, Frans: *See—*
Halonen, Heino; Hetemaa, Kalevi; and Vainio, Frans, 4,543,026, Cl. 414-352.000.

Vallomy, John A., to Intersteel Technology, Inc. Apparatus for continuous steelmaking. 4,543,124, Cl. 75-46.000.

Valmet Oy: *See—*
Kerttula, Reima; and Eskelinen, Pekka, 4,543,160, Cl. 162-193.000.
Viitanen, Olavi; and Kerttula, Reima, 4,542,593, Cl. 34-41.000.

Van Campenhout, Jan; de Stecker, Hans; Notredame, Paul; Muyle, Eddy; Bergmans, Jean-Paul; and Bergmans, Patrick, to Digitized Information Systems Corp., n.v. Automatic scanning device and its control for opto-mechanical processing applications. 4,543,615, Cl. 358-285.000.

van Lomm, Gerard J. E. H.: *See—*
Everhardus, Roelof H.; and van Lomm, Gerard J. E. H., 4,543,310, Cl. 430-59.000.

Vanore, Silvestro: *See—*
Brandi, Roberto; Di Lena, Francesco; Vanore, Silvestro; Naess, Tor; and Schamaun, Paul U., 4,543,014, Cl. 405-207.000.

Van Polen, Alta R., to Van Polen, Alta R.; and Sartwell, James F. Ostomy bag apparatus with side wall pocket to contain a deodorant member. 4,543,097, Cl. 604-333.000.

van Rooij, Jacobus H. M.; and Vaessen, Leonardus M. A., to Varitrac AG. Transmission chain. 4,543,081, Cl. 474-242.000.

Van Zeeland, Donald L.: *See—*
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Varitrac AG: *See—*
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Young, Clinton J. T., 4,542,958, Cl. 350-167.000.

Venables Enterprises: *See—*
Venables, Herbert J., III; and Venables, Herbert J., IV, 4,542,568, Cl. 29-157.3AH.

Venables, Herbert J., III; and Venables, Herbert J., IV, to Venables Enterprises. Apparatus for forming spine fin heat exchanger tubes. 4,542,568, Cl. 29-157.3AH.

Venables, Herbert J., IV: *See—*
Venables, Herbert J., III; and Venables, Herbert J., IV, 4,542,568, Cl. 29-157.3AH.

Verhoeven, Leonardus A. J., to U.S. Philips Corporation. X-ray examination apparatus. 4,543,605, Cl. 358-111.000.

Veron, Jean L. B.: *See—*
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Versatech Products Inc.: *See—*
Bennett, John A.; and Taylor, Scott L., 4,542,550, Cl. 15-3.000.

Versatile Equipment Co., Inc.: *See—*
Ray, David B., 4,542,900, Cl. 272-134.000.

Victor Company of Japan, Ltd.: *See—*
Mori, Tomohiro, 4,543,620, Cl. 360-49.000.

Vigarie , Jean-Pierre, to Vigarie , Jean-Pierre; and Etablissement Public de Diffusion dit "TELEDIFFUSION DE FRANCE" . Point memory graphic terminal. 4,543,645, Cl. 364-900.000.

Viitanen, Olavi; and Kerttula, Reima, to Valmet Oy. Apparatus for improving heat transfer in drying cylinders of a paper machine and method for assembling the same. 4,542,593, Cl. 34-41.000.

Vijan, Meera, to Energy Conversion Devices, Inc. Method of making a high performance, small area thin film transistor. 4,543,320, Cl. 430-314.000.

Villa, Vittoria: *See—*
Faustini, Franco; Villa, Vittoria; Gandolfi, Carmelo; and Di Salle, Enrico, 4,543,353, Cl. 514-236.000.

Villazon, Francisco: *See—*
Alonso, Martin; and Villazon, Francisco, 4,542,948, Cl. 339-59.00R.

Ville, Daniel; and Virmoux, Michel R. C., to Hispano-Suiza. Device for coupling two rotary machines. 4,543,074, Cl. 464-33.000.

Vinegar, Harold J.; and Wellington, Scott L., to Shell Oil Company. Method of correlating a core sample with its original position in a borehole. 4,542,648, Cl. 73-153.000.

Virmoux, Michel R. C.: *See—*
Ville, Daniel; and Virmoux, Michel R. C., 4,543,074, Cl. 464-33.000.

Vivian, Thomas A.: *See—*
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Voege, Herbert: *See—*
von Bittera, Miklos; Federmann, Manfred; von Gizycki, Ulrich; Schapel, Dietmar; Stendel, Wilhelm; Voege, Herbert; and Dorn, Hubert, 4,543,247, Cl. 424-14.000.

Voest-Alpine Aktiengesellschaft: *See—*
Muller, Josef; and Wunder, Johannes, 4,543,111, Cl. 55-230.000.
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Voigt, H. William, Jr., to United States of America, Army. Process for unitary shaped-charge structure. 4,543,220, Cl. 264-3.00C.

Voit, Karl. Staking machine. 4,542,634, Cl. 69-34.000.

von Angerer, Erwin; and Schonenberger, Helmut, to Degussa Aktiengesellschaft. 2-(Hydroxy-phenyl)-indoles and process for their production. 4,543,360, Cl. 514-415.000.

von Bittera, Miklos; Federmann, Manfred; von Gizycki, Ulrich; Schapel, Dietmar; Stendel, Wilhelm; Voege, Herbert; and Dorn, Hubert, to Bayer Aktiengesellschaft. Ectoparasiticide-containing collars for pets. 4,543,247, Cl. 424-14.000.

von Gise, Hardo F. Incubating apparatus for selective and exact treatment of histological preparations. 4,543,236, Cl. 422-50.000.

von Gizycki, Ulrich: *See—*
von Bittera, Miklos; Federmann, Manfred; von Gizycki, Ulrich; Schapel, Dietmar; Stendel, Wilhelm; Voege, Herbert; and Dorn, Hubert, 4,543,247, Cl. 424-14.000.

Vora, Madhukar B., to Fairchild Camera and Instrument Corporation. Bipolar memory cell. 4,543,595, Cl. 357-71.000.

Vuletic, Bogdan, to Korf Engineering GmbH. Installation for the direct production of sponge iron particles and liquid crude iron from iron ore in lump form. 4,542,889, Cl. 266-137.000.

Vuletic, Bogdan, to Korf Engineering GmbH. Process for the direct production of sponge iron particles and liquid crude iron from iron ore in lump form. 4,543,123, Cl. 75-34.000.

WABCO Fahrzeugbremsen GmbH: *See*—
Liermann, Peter, 4,543,575, Cl. 340-825.570.

Wachi, Shigeaki, to Sony Corporation. Servo system including velocity and phase servo circuits for digital audio record disc reproducing apparatus. 4,543,650, Cl. 369-43.000.

Wada, Hirotsugu: *See*—
Nakasuji, Mamoru; and Wada, Hirotsugu, 4,543,512, Cl. 315-382.000.

Wada, Yoshiaki: *See*—
Chiba, Ko; Wada, Yoshiaki; Miida, Hiroshi; and Ono, Sumio, 4,542,907, Cl. 277-140.000.

Wade, William L., Jr.: *See*—
Binder, Michael; Walker, Charles W., Jr.; Petersen, Eric R.; Wade, William L., Jr.; and Gilman, Sol, 4,543,305, Cl. 429-101.000.

Wagner, Louis E.; Flannery, Harold F.; and Rakoczynski, Randolph W., to Environmental Design, Inc. Groundwater protection system. 4,543,013, Cl. 405-128.000.

Wahlstrom, Merle D.: *See*—
Fischer, Robert T.; and Wahlstrom, Merle D., 4,542,701, Cl. 105-240.000.

Waite, Brian. Wheelchairs. 4,542,917, Cl. 280-650.000.

Waite, Frederick A.: *See*—
Roberts, John S.; and Waite, Frederick A., 4,543,105, Cl. 44-55.000.

Wakabayashi, Takao, to Nakanishi Metal Works Co., Ltd. Power-and-free trolley conveyor of floor type. 4,542,698, Cl. 104-172.00B.

Wakasugi, Keizo: *See*—
Fujita, Yuji; Wakasugi, Keizo; and Kaneko, Ryoichi, 4,543,280, Cl. 428-35.000.

Wakimoto, Yasuhiro, to Fujitsu Limited. MOS type output driver circuit having a protective circuit. 4,543,494, Cl. 307-200.00B.

Wako Pure Chemical Industries, Ltd.: *See*—
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Waldhelm, Wolfgang: *See*—
Hellwege, Dieter; Steffen, Peter; and Waldhelm, Wolfgang, 4,543,582, Cl. 343-710.000.

Walker, Charles W., Jr.: *See*—
Binder, Michael; Walker, Charles W., Jr.; Petersen, Eric R.; Wade, William L., Jr.; and Gilman, Sol, 4,543,305, Cl. 429-101.000.

Walker, Connie W.: *See*—
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Walker, Harold E., Jr., to Somerset Welding & Steel, Inc. Top opening door assembly. 4,542,931, Cl. 296-100.000.

Walker, Joseph K., Jr.: *See*—
Beer, Henri B.; Hinden, Jean M.; Honard, Mark R.; Bishara, Jeries I.; and Walker, Joseph K., Jr., 4,543,348, Cl. 502-101.000.

Walker, Stephen D.: *See*—
Oakley, Clyde G.; Guess, Joe F.; Robbins, Cheston W.; Kelly, Robert M.; Skaar, Dean N.; and Walker, Stephen D., 4,542,745, Cl. 252-312.000.

Wallen, Milton A. Amusement device. 4,543,067, Cl. 434-300.000.

Wallerstein, Martin A. Low cost, renewable scraping implement. 4,542,554, Cl. 15-236.00R.

Wallow, Peter: *See*—
Bisping, Bernhard; Wallow, Peter; Gersbach, Klaus; and Romer, Rudolf, 4,542,696, Cl. 102-430.000.

Wallroth, Carl F.: *See*—
Kleinschmidt, Lothar; Wallroth, Carl F.; and Harms, Heye, 4,542,740, Cl. 128-204.210.

Wang, Chien-Yuan. Foldable multi-position ladder joint. 4,543,006, Cl. 403-93.000.

Wang Laboratories, Inc.: *See*—
Jones, Donald J., 4,543,654, Cl. 370-94.000.

Warga, Johann: *See*—
Ritter, Ernst; Schwartz, Reinhard; and Warga, Johann, 4,543,045, Cl. 417-499.000.

Watabe, Nobuyuki: *See*—
Hoshino, Fumihiko; Yamaguchi, Takahiro; Abe, Nobuyuki; Watabe, Nobuyuki; Katzukura, Yoshiteru; Hoshino, Tadahiko; Utsumi, Yoko; and Kuroda, Yoko, 4,543,259, Cl. 424-116.000.

Watanabe, Isao: *See*—
Yoshikawa, Ryoichi; Ohmori, Kouichi; and Watanabe, Isao, 4,542,974, Cl. 354-415.000.

Watanabe, Kazuhiro; Yoshikawa, Sakae; and Futami, Shunichi, to G-C Dental Industrial Corp. Low dusting powdery alginate impression material for dental use. 4,543,372, Cl. 523-109.000.

Watanabe, Masae, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle suspension system. 4,542,910, Cl. 280-276.000.

Watanabe, Tsutomu: *See*—
Hara, Tomihiro; Adaniya, Takeshi; Sagiyama, Masaru; Watanabe, Tsutomu; Shimoma, Takashi; and Nabatame, Masaru, 4,543,300, Cl. 428-610.000.

Webb, Carlene M., representative: *See*—
Webb, Orlando, Jr., deceased; and Webb, Carlene M., representative, 4,543,237, Cl. 422-62.000.

Webb, Orlando, Jr., deceased; and by Webb, Carlene M., representative. Apparatus for continuously measuring acid gravity in a hydrocarbon-acid system. 4,543,237, Cl. 422-62.000.

Weber, Wendelin: *See*—
Brandenburg, Klaus; and Weber, Wendelin, 4,543,004, Cl. 400-649.000.

Webster, Henry L.; and Barlow, Wayne K., to Wescor, Inc. Sweat-collecting device and method. 4,542,751, Cl. 128-760.000.

Wei, George C., to United States of America, Energy. Silicon carbide whisker reinforced ceramic composites and method for making same. 4,543,345, Cl. 501-95.000.

Weidner, Ralph F.; Regutti, Carl W.; and Liao, Chien W., to Mogul Corporation, The. Method of reducing hydrocarbon emissions occurring during iron ore sintering operations. 4,543,121, Cl. 75-5.000.

Weimar, Erich, to Draftex Development A.G. Finishing or sealing strips. 4,542,610, Cl. 49-491.000.

Weisenbarger, Gale M.; and Moran, John C. Apparatus and method for the treatment of well water therewith. 4,543,186, Cl. 210-221.200.

Weitl, Frederick L.; and Raymond, Kenneth N., to United States of America, Energy. Process for preparing 2,3-dihydroxybenzoic acid amides of tetraazaalkanes and cycloalkanes. 4,543,213, Cl. 260-239.0BC.

Weitz, Hans-Martin: *See*—
Schmieder, Klaus; Paust, Joachim; Fischer, Rolf; and Weitz, Hans-Martin, 4,543,417, Cl. 549-375.000.

Welker, Mark L., to A/C Research & Technology, Inc. Cooling apparatus for air conditioner and refrigeration systems. 4,542,627, Cl. 62-171.000.

Wella AG: *See*—
Konrad, Eugen; Braun, Hans J.; Mager, Herbert; Noser, Friedrich; and Bracher, Max, 4,543,425, Cl. 564-442.000.

Wellington, Scott L.: *See*—
Vinegar, Harold J.; and Wellington, Scott L., 4,542,648, Cl. 73-153.000.

Wells, Alton R.: *See*—
Wells, Robert M.; and Wells, Alton R., 4,543,473, Cl. 219-523.000.

Wells, John L., to Quantic Industries, Inc. Out-of-line underwater safing and arming device and method therefor. 4,542,694, Cl. 102-229.000.

Wells, Robert M.; and Wells, Alton R. Immersion heater and thermostat unit. 4,543,473, Cl. 219-523.000.

Welsh, James W., to Planning Research Corporation. Retention and cooling of plug-in electronic modules in a high shock and vibration environment. 4,542,784, Cl. 165-80.00B.

Wenzel, Franz: *See*—
Heil, Ernst; Wenzel, Franz; Arndt, Peter J.; and Schellhaas, Walter, 4,543,383, Cl. 524-458.000.

Werner, Frank D. Beam compass. 4,542,588, Cl. 33-27.00C.

Wescor, Inc.: *See*—
Webster, Henry L.; and Barlow, Wayne K., 4,542,751, Cl. 128-760.000.

Western Digital Corporation: *See*—
Ambrosius, William H., III; and Rossean, Larry D., 4,543,646, Cl. 364-900.000.

Westfalia Separator Ag: *See*—
Gawer, Klaus-Peter; and Suhr, Olaf, 4,542,766, Cl. 137-559.000.

Westinghouse Electric Corp.: *See*—
Brooker, Lenon G.; and Jarrell, Donald L., 4,543,290, Cl. 428-336.000.
Melamed, Nathan T., 4,543,296, Cl. 428-522.000.

Westley, Curtis E., to Honeywell Inc. Variable torque slip clutch. 4,542,812, Cl. 192-56.00R.

Westrup, Bernhard, to Dragerwerk Aktiengesellschaft. Indicator for determining sulfur dioxide. 4,543,336, Cl. 436-122.000.

Wetterhorn, Richard H.: *See*—
Wilson, Harold W.; and Wetterhorn, Richard H., 4,542,654, Cl. 73-741.000.

Whang, J. S.; and Wollmann, Andrew F., to Quartz Engineering & Materials, Inc. Slotted cantilever diffusion tube system and method and apparatus for loading. 4,543,059, Cl. 432-11.000.

Wheeler, Charles E., III; and Wheeler, Kathleen J. Carriage assembly. 4,542,915, Cl. 280-642.000.

Wheeler, Kathleen J.: *See*—
Wheeler, Charles E., III; and Wheeler, Kathleen J., 4,542,915, Cl. 280-642.000.

White, Don H. Angle stop valve wrench. 4,542,666, Cl. 81-176.100.

White, James A., to Miles Laboratories, Inc. Method and apparatus for converting radiant energy levels to digital data. 4,543,558, Cl. 340-347.0AD.

White, Lionel S., Jr.: *See*—
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,543,500, Cl. 307-530.000.
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,543,501, Cl. 307-530.000.

White, Lloyd R.: *See*—
Forester, Roger J.; and White, Lloyd R., 4,543,113, Cl. 55-378.000.

White, Thomas C. Intraocular lens. 4,542,540, Cl. 623-6.000.

Whitefoot, Keith: *See*—
Sparks, David J.; Whitefoot, Keith; and Knubley, John S., 4,542,836, Cl. 222-27.000.

Whiteman, Gary D. Fold-up camper. 4,542,932, Cl. 296-160.000.

Whiteside, George D.: *See*—
Costa, Peter F.; and Whiteside, George D., 4,542,967, Cl. 354-187.000.
Johnson, Bruce K.; and Whiteside, George D., 4,542,973, Cl. 354-413.000.

Wickson, Edward J.: *See*—
Godwin, Allen D.; and Wickson, Edward J., 4,543,420, Cl. 560-76.000.

Wiener, Hans; and Undin, Hans, to C. A. Weidmuller GmbH & Co. Pliers-type pressing tool. 4,542,668, Cl. 81-355.000.

Wiggins Teape Group Limited, The: *See—*
Radvan, Bronislaw; Skelding, William T. H.; and Willis, Anthony J., 4,543,288, Cl. 428-297.000.

Wilhelm Hegenscheidt Gesellschaft mbH: *See—*
Berstein, Garri; and Bagusche, Siegfried, 4,542,565, Cl. 29-90.00R.

Wilkinson, Noel R., to Robert Morton DG Limited. Brewing apparatus. 4,542,683, Cl. 99-277.200.

Wilkinson, Robert G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Synchronizing of clocks. 4,543,657, Cl. 375-1.000.

Wilkinson, Ronald E., to Teledyne Industries, Inc. Engine cooling system. 4,542,719, Cl. 123-41.350.

Willcott, M. Robert: *See—*
Mee, Gary L.; and Willcott, M. Robert, 4,543,529, Cl. 324-313.000.

William H. Rorer, Inc.: *See—*
Kuhla, Donald E.; Campbell, Henry F.; and Studt, William L., 4,543,352, Cl. 514-212.000.

Williams, Edward K.: *See—*
Kaminski, Christopher A.; and Williams, Edward K., 4,543,503, Cl. 310-59.000.

Williams, Hugh K., to Caterpillar Tractor Co. Starting system/hydraulic system interlock. 4,542,721, Cl. 123-179.00K.

Williams Industries, Inc.: *See—*
Turner, Donald R., 4,543,445, Cl. 174-5.00R.

Williams, Luanne S.: *See—*
Grover, Jeffrey M.; and Williams, Luanne S., 4,543,233, Cl. 376-446.000.

Williams, Todd R.: *See—*
Bany, Stephen W.; Koshar, Robert J.; and Williams, Todd R., 4,543,398, Cl. 525-474.000.

Willis, Anthony J.: *See—*
Radvan, Bronislaw; Skelding, William T. H.; and Willis, Anthony J., 4,543,288, Cl. 428-297.000.

Willis, Donald H.; and Fling, Russell T., to RCA Corporation. Analog-to-digital conversion apparatus including double dither signal sources. 4,543,599, Cl. 358-13.000.

Willis, Robin B.: *See—*
Beattie, David L. G.; Bear, Herbert; and Willis, Robin B., 4,543,114, Cl. 55-418.000.

Willott, Lionel R. Appliance. 4,542,738, Cl. 128-67.000.

Wilson, Harold W.; and Wetterhorn, Richard H., to Dresser Industries, Inc. Bourdon tube construction. 4,542,654, Cl. 73-741.000.

Wilson, Warren. Apparatus for making funnel cakes using a deep fryer. 4,542,685, Cl. 99-413.000.

Windish, Willis E.: *See—*
Richards, David L.; and Windish, Willis E., 4,542,801, Cl. 180-53.100.

Windmoller & Holscher: *See—*
Feldkamper, Richard; Maneke, Siegfried; and Philipp, Bernhard, 4,542,894, Cl. 271-11.000.

Wine, Charles M., to RCA Corporation. Mechanically-actuated transparent touchbars and touchplates. 4,543,563, Cl. 340-365.00S.

Winkelman, Jeffry; and Steinberg, Janee D. Hemostatic ellipse guide for cutting skin. 4,542,742, Cl. 128-325.000.

Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG: *See—*
Blumle, Martin, 4,542,895, Cl. 271-101.000.

Winter, Hermann: *See—*
Hammer, Klaus-Dieter; Winter, Hermann; Kindl, Erwin; and Luchterhand, Heinz, 4,543,282, Cl. 428-36.000.

Wirth Gallo Patent AG: *See—*
Saner, Kaspar, 4,542,659, Cl. 73-862.380.

Wisconsin Alumni Research Foundation: *See—*
Ellis, Arthur B.; and Streckert, Holger H., 4,543,511, Cl. 315-169.300.

Withycombe, Donald A.: *See—*
Rutherford, Howard J.; and Withycombe, Donald A., 4,543,367, Cl. 521-79.000.

Witt, Henry J., to FMC Corporation. Toiletry formulations comprising low molecular weight carrageenan. 4,543,250, Cl. 424-70.000.

Wittchow, Eberhard: *See—*
Engelhardt, Reiner; and Wittchow, Eberhard, 4,543,110, Cl. 55-27.000.

Witte, Hans-Hermann; and Rohler, Manfred, to Siemens Aktiengesellschaft. Optical coupler network for coupling a plurality of subscriber transmitters to a plurality of subscriber receivers by means of optical star couplers. 4,543,666, Cl. 455-612.000.

Witzenmann GmbH Metallschlauch-Fabrik Pforzheim: *See—*
Elsasser, Friedrich, 4,542,877, Cl. 248-561.000.

Wohr, Rolf: *See—*
Bressert, Edgar; Gulich, Gerhard; Martini, Helmut; Meny, Rudi; Sauer, Roland; and Wohr, Rolf, 4,543,570, Cl. 340-589.000.

Wolf, Anthony D.: *See—*
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Wolf, Ehrenfried G. B. Dental bridge. 4,543,064, Cl. 433-208.000.

Wolf-Gerate GmbH: *See—*
Orth, Gunther, 4,542,705, Cl. 111-85.000.

Wolf, Horst, to Zinser Textilmaschinen GmbH. Method and apparatus for stopping a rapidly advancing filament. 4,543,519, Cl. 318-759.000.

Wolfbeis, Ludwig: *See—*
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Wolfe, Dexter L.; and Peerenboom, Robert J., to Kimberly-Clark Corporation. Tampon with resilient component and microfiber insert. 4,543,098, Cl. 604-370.000.

Wolff, Douglas F.: *See—*
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Wolff Wire Corporation: *See—*
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Wolfram, Roland, to Siemens Aktiengesellschaft. Method for manufacturing a tubular part for generating a spatially alternating magnetic field within a magnet system for guiding the electron beam of travelling-wave tubes. 4,542,581, Cl. 29-600.000.

Wollmann, Andrew F.: *See—*
Whang, J. S.; and Wollmann, Andrew F., 4,543,059, Cl. 432-11.000.

Wood, Kenneth G. Combined pressurized air solar heat sensing head assembly and a pressurized water drive system used to move solar energy collectors in tracking the sun. 4,542,737, Cl. 126-425.000.

Woods, John; Rooney, John M.; and Harris, Stephen J., to Loctite (Ireland) Ltd. Styryloxy resins and compositions thereof. 4,543,397, Cl. 525-455.000.

Woodward Governor Company: *See—*
Garvey, Daniel C.; and Fiolkoski, Richard D., 4,542,802, Cl. 180-306.000.

Woznicki, Edward J.: *See—*
Porter, Stuart C.; and Woznicki, Edward J., 4,543,370, Cl. 523-100.000.

Wright, George M., to Innovative Surgical Products, Inc. Correction of defects in the eye and compositions therefor. 4,542,542, Cl. 62-6.000.

Wright, William H. Bench for automotive vehicle body shops. 4,542,636, Cl. 72-305.000.

Wristers, Harry J., to Exxon Research & Engineering Co. Titanium trichloride catalyst component and the process for the production thereof. 4,543,400, Cl. 526-119.000.

Wrulich, Herwig: *See—*
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Wunder, Johannes: *See—*
Muller, Josef; and Wunder, Johannes, 4,543,111, Cl. 55-230.000.

Wurdack, Gerard A., to Gerard A. Wurdack & Associates, Inc. Dipole antenna formed of coaxial cable. 4,543,583, Cl. 343-792.000.

Wurz, Dieter. Mist eliminator for eliminating droplets from a gaseous flow. 4,543,108, Cl. 55-1.000.

Xerox Corporation: *See—*
Mahabadi, Hadi-Khan; and Alexandru, Lupu, 4,543,313, Cl. 430-109.000.
Maxwell, Kenneth H., deceased, 4,543,314, Cl. 430-134.000.
Parker, Delmer G., 4,543,586, Cl. 346-74.400.
Zambelli, Robert G.; and Shogren, David K., 4,542,983, Cl. 355-55.000.

Xomox Corporation: *See—*
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Y. Toyoda International Patent Office: *See—*
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Yada, Hiroaki: *See—*
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Yagi, Shigeo: *See—*
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Yalof, Stanley: *See—*
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Yamada, Shinichi: *See—*
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Yamada, Sumio: *See—*
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Yamada, Tateo; Kimura, Hiroyuki; and Taka, Hideo, to Canon Kabushiki Kaisha. Automatic film rewinding device. 4,542,865, Cl. 242-205.000.

Yamaguchi, Sumio: *See—*
Sato, Kazuo; Yamaguchi, Sumio; Kato, Shigeo; Matsumura, Yasuhide; Mizumoto, Muneo; Okuno, Sumio; and Tamura, Naoyuki, 4,542,712, Cl. 118-726.000.

Yamaguchi, Takahiro: *See—*
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Yamaki, Kiyoshi: *See—*
Tachibana, Akira; Fujiki, Norio; Endo, Hiroshi; Yamaki, Kiyoshi; and Kishi, Norimasa, 4,543,577, Cl. 340-904.000.
Tanaka, Haruto; Yamaki, Kiyoshi; and Suzuki, Hidetaka, 4,543,572, Cl. 340-723.000.

Yamamoto, Masakazu. Tape measure. 4,542,589, Cl. 33-138.000.

Yamamoto, Ronald K.: *See—*
Bootman, Matthew W.; and Yamamoto, Ronald K., 4,543,088, Cl. 604-93.000.

Yamamura, Yuichi; Azuma, Ichiro; Ennyu, Katsusuke; and Aoki, Osamu. Solidified pharmaceutical composition comprising cell wall skeleton. 4,543,253, Cl. 514-21.000.

Yamamuro, Sigeaki; Kumura, Haruyoshi; Tanaka, Yoshikazu; Abo, Keiju; and Hirano, Hiroyuki, to Nissan Motor Co., Ltd. Control

system for continuously variable transmission with space saving automatic clutch control. 4,542,665, Cl. 74-866.000.

Yamamuro, Sigeaki; Hirano, Hiroyuki; Morimoto, Yoshiro; and Tanaka, Yoshikazu, to Nissan Motor Co., Ltd. Method and apparatus for controlling continuously variable V-belt transmission. 4,543,077, Cl. 474-12.000.

Yamanaga, Junichi; and Naito, Shiro, to Honda Giken Kogyo Kabushiki Kaisha. Replaceable head multi-spindle fastening apparatus. 4,542,576, Cl. 29-568.000.

Yamanashi, Fumiaki: *See*—
Hayashi, Yuzo; Yamanashi, Fumiaki; and Fujiwara, Yoshiyuki, 4,543,201, Cl. 252-299.100.

Yamane, Makoto: *See*—
Komatsu, Nobuhiro; Fujimoto, Minoru; Hirata, Kazuyuki; and Yamane, Makoto, 4,542,934, Cl. 296-194.000.

Yamano, Masaru; Nagaoka, Isao; Kuwano, Yukinori; Kawada, Hiroshi; and Sakai, Souichi, to Sanyo Electric Co., Ltd. Method of manufacturing photovoltaic device. 4,542,578, Cl. 29-572.000.

Yamaoka, Yoshiaki: *See*—
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Yamashita, Yasuhiro: *See*—
Noda, Shigeo; Yamashita, Yasuhiro; and Imamura, Kosei, 4,543,636, Cl. 364-474.000.

Yamato, Akihiro; and Otobe, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio control method having fail-safe function for abnormalities in oxygen concentration detecting means for internal combustion engines. 4,542,729, Cl. 123-440.000.

Yamato, Toshio; Ohba, Tsutomu; and Kabata, Tunetoshi, to Nippon Kayaku Kabushiki Kaisha. Baffle tray tower. 4,543,219, Cl. 261-109 000.

Yamazaki, Michio: *See*—
Karasawa, Tadayoshi; Kawano, Katsumi; Uchiyama, Katsuji; and Yamazaki, Michio, 4,543,197, Cl. 252-62.560.

Yamazaki, Shunpei. Method of making a non-single-crystalline semiconductor layer on a substrate. 4,543,267, Cl. 427-39.000.

Yanagihara, Yuzo, to Asahi Kasei Kogyo Kabushiki Kaisha. Ion exchanger having hydroxyl groups bonded directly to backbone skeleton. 4,543,363, Cl. 521-38.000.

Yanagishita, Hitoshi: *See*—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,543,207, Cl. 252-570.000.

Yang, Kie-Hsiung, to International Business Machines Corporation. Fringe-field switched storage-effect liquid crystal display devices. 4,542,960, Cl. 350-336.000.

Yaoka, Osamu: *See*—
Nakao, Toru; Ikebe, Tsuguo; Tahara, Tetsuya; Maruyama, Yutaka; and Yaoka, Osamu, 4,543,354, Cl. 514-238.000.

Yasuda, Yoshinori: *See*—
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Yasuhara, Seishi, to Nissan Motor Company, Limited. Fuel injection rate control system for an internal combustion engine. 4,542,725, Cl. 123-299.000.

Yazawa, Kenji; and Baba, Kenichi, to Sony Corporation. Magnetic recording medium. 4,543,301, Cl. 428-621.000.

Yeh, An-I: *See*—
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Yim, Nelson C.: *See*—
Callahan, James F.; Moore, Michael L.; and Yim, Nelson C., 4,543,349, Cl. 514-11.000.

Yokoi, Gunpei; and Okada, Satoru, to Nintendo Co., Ltd. Hand-held game apparatus. 4,542,903, Cl. 273-85.00G.

Yokomizo, Yoshikazu: *See*—
Tateoka, Masamichi; Asano, Junichi; Kurata, Mitsuru; and Yokomizo, Yoshikazu, 4,543,491, Cl. 250-578.000.

Yoshida, Fumio, to Kabushiki Kaisha Yamada Dobby. Command device for dobby. 4,542,770, Cl. 139-68.000.

Yoshida Kogyo K.K.: *See*—
Horita, Yoshiyuki, 4,543,226, Cl. 264-230.000.

Yoshida, Masanobu, to Fujitsu Limited. Electrically programmable non-volatile semiconductor memory device. 4,543,647, Cl. 365-201.000.

Yoshida, Okio: *See*—
Harada, Nozomu; Endo, Yukio; Yoshida, Okio; and Matsunaga, Yoshiyuki, 4,543,489, Cl. 250-578.000.
Harada, Nozomu; and Yoshida, Okio, 4,543,601, Cl. 358-213.000.

Yoshida, Yoshio: *See*—
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Yoshihama, Hideo: *See*—
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Yoshikawa, Ryoichi; Ohmori, Kouichi; and Watanabe, Isao, to Canon Kabushiki Kaisha. Flash photography apparatus. 4,542,974, Cl. 354-415.000.

Yoshikawa, Sakae: *See*—
Watanabe, Kazuhiro; Yoshikawa, Sakae; and Futami, Shunichi, 4,543,372, Cl. 523-109.000.

Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, to Y. Toyoda International Patent Office. Process for preparing cold drawn film from an ethylene-α-olefin copolymer and at least one of low-density polyethylene or ethylene copolymers and polypropylene, high density polyethylene or crystalline polybutadiene. 4,542,886, Cl. 264-22.000.

Yoshimura, Yukio, to Kabushiki Kaisha Komatsu Seisakusho. Leader angle control device. 4,542,795, Cl. 173-2.000.

Yoshinari, Osamu; Sugiyama, Makoto; and Nakai, Hideki, to Toho Beslon Co., Ltd. Method and apparatus for continuous production of carbon fibers. 4,543,241, Cl. 423-447.700.

Yoshino, Tooru: *See*—
Nakamura, Kazuharu; Matsumoto, Motoki; and Yoshino, Tooru, 4,543,057, Cl. 431-208.000.

Yoshioka, Tamotsu: *See*—
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Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Nakao, Toru; Ikebe, Tsuguo; Tahara, Tetsuya; Maruyama, Yutaka; and Yaoka, Osamu, 4,543,354, Cl. 514-238.000.

Young, Clinton J. T., to Vasco, Ltd. Variable aspect display. 4,542,958, Cl. 350-167.000.

Young, Dennis: *See*—
Heyward, Malcolm P.; and Young, Dennis, 4,543,347, Cl. 502-61.000.

Young, Edgar D.: *See*—
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Yuhara, Katsuo: *See*—
Kumada, Masaharu; Tanabe, Hideo; Yuhara, Katsuo; Misumi, Akira; and Kawasaki, Hiroshi, 4,543,441, Cl. 136-249.000.

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Zahnradfabrik Friedrichafen: *See*—
Bieber, Gerold, 4,542,662, Cl. 74-470.000.

Zambelli, Robert G.; and Shogren, David K., to Xerox Corporation. Multi-magnification reproduction device utilizing linear lens assembly. 4,542,983, Cl. 355-55.000.

Zapisek, Stephen: *See*—
D'Agostino, Vincent F.; Lee, Joseph Y.; Zapisek, Stephen; and Schore, George, 4,543,169, Cl. 204-105.00R.

Ziegenhorn, Joachim: *See*—
Albert, Winfried; Ziegenhorn, Joachim; Siedel, Joachim; Batz, Hans-Georg; Lenz, Helmut; and Pautz, Brigitte, 4,543,325, Cl. 435-7.000.

Ziegner, Bernhard A., to Motorola, Inc. LCC co-planar lead frame semiconductor IC package. 4,543,544, Cl. 333-34.000.

Zimmer, Johannes: *See*—
Glantschnig, Josef; Gugl, Peter; Puntschart, Ernst; and Zimmer, Johannes P. M., 4,542,692, Cl. 101-123.000.

Zimmer, Johannes P. M.: *See*—
Glantschnig, Josef; Gugl, Peter; Puntschart, Ernst; and Zimmer, Johannes P. M., 4,542,692, Cl. 101-123.000.

Zimmermann, Manfred: *See*—
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Zimonis, Joseph P.: *See*—
Hovan, Edward J.; and Zimonis, Joseph P., 4,542,623, Cl. 60-226.100.

Zinser Textilmaschinen GmbH: *See*—
Wolf, Horst, 4,543,519, Cl. 318-759.000.

Zitz, Alfred; Wrulich, Herwig; Schetina, Otto; and Maier, Wilfried, to Voest-Alpine Aktiengesellschaft. Bit holder equipped with a spraying device. 4,542,942, Cl. 299-81.000.

Zortea, Michel: *See*—
Burget, Paul; and Zortea, Michel, 4,543,117, Cl. 65-135.000.

Zurinski, Viktor; Lucic, Ivan; and Barthelmes, Karlheinz, to Siemens Aktiengesellschaft. Ultrasonic applicator for biopsy. 4,542,747, Cl. 128-660.000.

Zwick, Harold H., to Moniteq Ltd. Leak detection in pipelines. 4,543,481, Cl. 250-339.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF SEPTEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Stucki Company: *See*—
Wiebe, Donald, Re. 31,988, Cl. 105-197.0DB.

Ancker, Fred H.; Ashcraft, Arnold C., Jr.; Leung, Martin S.; and Ku, Audrey Y., to Union Carbide Corporation. Reinforcement promoters for filled thermoplastic polymers. Re. 31,992, Cl. 523-202.000.

Ashcraft, Arnold C., Jr.: *See*—
Ancker, Fred H.; Ashcraft, Arnold C., Jr.; Leung, Martin S.; and Ku, Audrey Y., Re. 31,992, Cl. 523-202.000.

Calfee, Richard V.: *See*—
Sluetz, James E.; and Calfee, Richard V., Re. 31,990, Cl. 128-419.00P.

Descoteaux, Claude; and Wenzel, Chester. Single guide rod actuating unit. Re. 31,991, Cl. 294-88.000.

Ichikawa, Satoru: *See*—
Nomura, Kazuhiko; and Ichikawa, Satoru, Re. 31,989, Cl. 180-219.000.

Intermedics, Inc.: *See*—
Sluetz, James E.; and Calfee, Richard V., Re. 31,990, Cl. 128-419.00P.

Ku, Audrey Y.: *See*—
Ancker, Fred H.; Ashcraft, Arnold C., Jr.; Leung, Martin S.; and Ku, Audrey Y., Re. 31,992, Cl. 523-202.000.

Leung, Martin S.: *See*—
Ancker, Fred H.; Ashcraft, Arnold C., Jr.; Leung, Martin S.; and Ku, Audrey Y., Re. 31,992, Cl. 523-202.000.

Nomura, Kazuhiko; and Ichikawa, Satoru, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle engine exhaust system. Re. 31,989, Cl. 180-219.000.

Sluetz, James E.; and Calfee, Richard V., to Intermedics, Inc. Multiple function lead assembly and method for inserting assembly into an implantable tissue stimulator. Re. 31,990, Cl. 128-419.00P.

Union Carbide Corporation: *See*—
Ancker, Fred H.; Ashcraft, Arnold C., Jr.; Leung, Martin S.; and Ku, Audrey Y., Re. 31,992, Cl. 523-202.000.

Wenzel, Chester: *See*—
Descoteaux, Claude; and Wenzel, Chester, Re. 31,991, Cl. 294-88.000.

Wiebe, Donald, to A. Stucki Company. Railway truck bolster friction assembly. Re. 31,988, Cl. 105-197.0DB.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Nomura, Kazuhiko; and Ichikawa, Satoru, Re. 31,989, Cl. 180-219.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Brunnee, Curt: *See*—
Feser, Karl; and Brunnee, Curt, B1 4,267,448, Cl. 250-281.000.

Cornwall, Kenneth R. Concrete floor embedded coupling for plastic pipe. B1 4,261,598, 9-24-85, Cl. 285-56.000.

Feser, Karl; and Brunnee, Curt, to Finnigan Mat GmbH. Ion detector with bipolar accelerating electrode. B1 4,267,448, 9-24-85, Cl. 250-281.000.

Finnigan Mat GmbH: *See*—
Feser, Karl; and Brunnee, Curt, B1 4,267,448, Cl. 250-281.000.

Pennwalt Corporation: *See*—
Wagle, Uday D.; and Ramdas, Venkatram, B1 4,075,236, Cl. 260-453.0RZ.

Pohl, Gerhard, to Zwissler Ulrich Dr. Weldability of articles made from plastic foams. B1 3,906,134, 9-24-85, Cl. 156-229.000.

Ramdas, Venkatram: *See*—
Wagle, Uday D.; and Ramdas, Venkatram, B1 4,075,236, Cl. 260-453.0RZ.

Wagle, Uday D.; and Ramdas, Venkatram, to Pennwalt Corporation. Continuous manufacture of peroxyesters. B1 4,075,236, 9-24-85, Cl. 260-453.0RZ.

Zwissler Ulrich Dr.: *See*—
Pohl, Gerhard, B1 3,906,134, Cl. 156-229.000.

LIST OF DESIGN PATENTEES

AB Cerbo: *See*—
Skylvik, Arnold, 280,710, Cl. D9-434.000.

Acurex Corporation: *See*—
Cohn, Robert S.; and Messamer, Charles A., 280,712, Cl. D10-83.000.

Addy, James T., Jr.; and Mohr, Alfred V., to Dr. Pepper Company. Bottle Carrier. 280,773, 9-24-85, Cl. D34-44.000.

Advanced Technology Laboratories, Inc.: *See*—
LaCelle, LeRoy J.; and Ungar, Joseph L., 280,762, Cl. D24-17.000.

Airwick Industries, Inc.: *See*—
Paulovich, John M.; and Patel, Manharbhai K., 280,757, Cl. D23-3.000.

Allen, James H., to 'totes', incorporated. Umbrella handle. 280,677, 9-24-85, Cl. D3-12.000.

Alvino, Frank J., to HealthScan Inc. Design for inspiratory muscle trainer. 280,765, 9-24-85, Cl. D24-62.000.

Amba Marketing Systems, Inc.: *See*—
Schimmel, Otto K., 280,679, Cl. D3-53.000.

American Commercial Incorporated: *See*—
Laslo, Larry R., 280,688, Cl. D7-5.000.

American Standard Inc.: *See*—
Bateman, John L., 280,734, Cl. D19-11.000.

American Tourister, Inc.: *See*—
Bomes, Harvey; Pulichino, John; Carpenter, Lester E.; and Wickman, John A., 280,680, Cl. D3-76.000.

Apco Graphics, Inc.: *See*—
Cobb, Ronald W., 280,745, Cl. D20-42.000.

Aqua-Leisure Industries, Inc.: *See*—
Fireman, Simon C., 280,670, Cl. D2-234.000.

Baker, Lester H., to Lindsley, Warren F. B. Plant root extraction tool. 280,693, 9-24-85, Cl. D8-9.000.

Baldridge, John H. Support stand for use in repairing saddles. 280,687, 9-24-85, Cl. D6-512.000.

Ballew, Leon D. Pipeholder or the like. 280,697, 9-24-85, Cl. D8-382.000.

Bally Manufacturing Corporation: *See*—
Jansons, Eric; Jarocki, Stanley W.; and Godlewski, Walter A., 280,748, Cl. D21-13.000.

Barnett, Earl D., to Chicago Show Printing Co. Mobile dispenser rack. 280,771, 9-24-85, Cl. D34-22.000.

Bateman, John L., to American Standard Inc. Combined check and check stub. 280,734, 9-24-85, Cl. D19-11.000.
Bateman, Robert F.: *See—*
Loscalzo, Dominick; Michaelson, Howard W.; Bateman, Robert F.; and Wolff, Martin J., 280,678, Cl. D3-39.000.
Baxter Travenol Laboratories, Inc.: *See—*
Boarini, Edward J., 280,764, Cl. D24-53.000.
Kulle, Lee K., 280,763, Cl. D24-27.000.
Benjamin, William S.: *See—*
Johnson, Robert S.; Fletcher, Paul E.; Benjamin, William S.; and Zsitvay, John I., 280,769, Cl. D32-44.000.
Billick, James E.: *See—*
Ferraris, John T.; Billick, James E.; and Schick, George L., 280,768, Cl. D32-23.000.
Bloxham, Keith D., to Restaurant Equipment Mfg., Inc. Tortilla chip cutter. 280,690, 9-24-85, Cl. D7-43.000.
Boarini, Edward J., to Baxter Travenol Laboratories, Inc. Injection site. 280,764, 9-24-85, Cl. D24-53.000.
Bomes, Harvey; Pulichino, John; Carpenter, Lester E.; and Wickman, John A., to American Tourister, Inc. Wheeled suitcase. 280,680, 9-24-85, Cl. D3-76.000.
B.V. Machine- en Metaalwarenfabriek "Dremefa" : *See—*
Drexler, Joannes H., 280,694, Cl. D8-88.000.
Campbell, Bobby J.: *See—*
Rumbarger, David P., Jr.; Campbell, Bobby J.; and Harrison, Stephen M., 280,727, Cl. D15-7.000.
Carpenter, Lester E.: *See—*
Bomes, Harvey; Pulichino, John; Carpenter, Lester E.; and Wickman, John A., 280,680, Cl. D3-76.000.
Cervero, Paul M., to Ex-Cell-O Corporation. Word processor console cabinet. 280,684, 9-24-85, Cl. D6-422.000.
Chatham, Richard W. Compartmented tray for drafting supplies. 280,741, 9-24-85, Cl. D19-77.000.
Chicago Show Printing Co.: *See—*
Barnett, Earl D., 280,771, Cl. D34-22.000.
Cobb, Ronald W., to Apco Graphics, Inc. Emergency message display sign. 280,745, 9-24-85, Cl. D20-42.000.
Cochran, Ken C. Combined basketball game goals and return net. 280,755, 9-24-85, Cl. D21-201.000.
Cohn, Robert S.; and Messamer, Charles A., to Acurex Corporation. Electronic computer scale. 280,712, 9-24-85, Cl. D10-83.000.
Comet S.A.R.A. Societa Autoadesivi Resin E Affine S.P.A.: *See—*
Grassi, Ermanno, 280,738, Cl. D19-68.000.
Crown Zellerbach Corporation: *See—*
Waring, Don, 280,709, Cl. D9-370.000.
Daisy Systems Holland B.V.: *See—*
Schuiling, Theodorus A., 280,736, Cl. D18-22.000.
Dalton, Michael E., to Heiman, Don C. Pencil cleaning disc and abrasive sheet package. 280,704, 9-24-85, Cl. D9-337.000.
Dart Industries Inc.: *See—*
Loscalzo, Dominick; Michaelson, Howard W.; Bateman, Robert F.; and Wolff, Martin J., 280,678, Cl. D3-39.000.
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600 4,542,581
622 4,542,582
749 4,542,583

CLASS 30

120.1 4,542,584
210 4,542,585

CLASS 33

12 4,542,586
27 B 4,542,587
27 C 4,542,588
138 4,542,589
169 R 4,542,590
265 4,542,591
386 4,542,592

CLASS 34

41 4,542,593
71 4,542,594
95 4,542,595
115 4,542,596

CLASS 36

2 R 4,542,597
114 4,542,598
117 4,542,599

CLASS 37

195 4,542,600

CLASS 38

7 4,542,601
102.1 4,542,602

CLASS 40

447 4,542,603
475 4,542,604
574 4,542,605

CLASS 42

75 B 4,542,606

CLASS 43

42.52 4,542,607

CLASS 44

1 SR 4,543,104
55 4,543,105

CLASS 47

1.1 4,542,608
57.6 4,542,609

CLASS 49

491 4,542,610

CLASS 51

295 4,543,106
309 4,543,107

CLASS 52

172 4,542,611
337 4,542,612
375 4,542,613
586 4,542,614
729 4,542,615

CLASS 53

137 4,542,616

CLASS 55

1 4,543,108
25 4,543,109
27 4,543,110
230 4,543,111
316 4,543,112
378 4,543,113
418 4,543,114

CLASS 56

341 4,542,617

CLASS 57

58.83 4,542,618
210 4,542,619
302 4,542,620

CLASS 60

39.05 4,542,621
39.23 4,542,622
226.1 4,542,623
535 4,542,624
641.2 4,542,625

CLASS 62

6 4,542,542
25 4,543,115
45 4,542,626
171 4,542,627
335 4,542,628
476 4,542,629

CLASS 63

3 4,542,630
31 4,542,631

CLASS 65

40 4,543,116
135 4,543,117
360 4,543,118

CLASS 66

64 4,542,632

CLASS 68

12 R 4,542,633

CLASS 69

34 4,542,634

CLASS 71

90 4,543,119
93 4,543,120

CLASS 72

14 4,542,635
305 4,542,636
466 4,542,637

CLASS 73

1 R 4,542,638
12 4,542,639
23 4,542,640
26 4,542,641
40.5 R 4,542,642
49.2 4,542,643
61 R 4,542,644
64.1 4,542,645
78 4,542,646
151 4,542,647
153 4,542,648
168 4,542,649
204 4,542,650
250 4,542,651
597 4,542,652
626 4,542,653
741 4,542,654
784 4,542,655
852 4,543,126
861.25 4,542,657
861.28 4,542,656
862.31 4,542,658
862.38 4,542,659

CLASS 74

27 4,542,660
424.8 NA 4,542,661
470 4,542,662
801 4,542,663
804 4,542,664
866 4,542,665

CLASS 75

0.5 B 4,543,122
5 4,543,121
34 4,543,123
46 4,543,124
51.5 4,543,125

CLASS 81

176.1 4,542,666
177.2 4,542,667
355 4,542,668
418 4,542,669

CLASS 83

295 4,542,670
343 4,542,671
409 4,542,672
422 4,542,673
527 4,542,674

CLASS 84

1.03 4,542,675
94 C 4,542,676

CLASS 86

38 4,542,677

CLASS 91

6 4,542,678
363 A 4,542,679
369 A 4,542,680

CLASS 98

50 4,542,681

CLASS 99

277.1 4,542,682
277.2 4,542,683
403 4,542,684
413 4,542,685
483 4,542,686
639 4,542,687

CLASS 100

173 4,542,688
215 4,542,689

CLASS 101

27 4,542,690
114 4,542,691
123 4,542,692
350 4,542,693

CLASS 102

229 4,542,694
378 4,542,695
430 4,542,696

CLASS 104

2 4,542,697
172 B 4,542,698

CLASS 105

99 4,542,699
166 4,542,700
197 DB Re.31,988
240 4,542,701

CLASS 106

18.29 4,543,127
23 4,543,128

CLASS 108

109 4,542,702

CLASS 110

246 4,542,703
347 4,542,704

CLASS 111

85 4,542,705

CLASS 112

229 4,542,706
310 4,542,707

CLASS 114

243 4,542,708

CLASS 116

63 P 4,542,709

CLASS 118

52 4,542,710
718 4,542,711
726 4,542,712

CLASS 119

1 4,542,713
29 4,542,714
72 4,542,715

CLASS 122

4 D 4,542,716

CLASS 123

25 B 4,542,717
41.15 4,542,718
41.35 4,542,719
90.38 4,542,720
179 E 4,542,722
179 K 4,542,721
187.5 R 4,542,723
266 4,542,724
299 4,542,725
320 4,542,726
435 4,542,727
440 4,542,728
4,542,729
489 4,542,730

CLASS 124

24 R 4,542,731
4,542,732

CLASS 126

41 R 4,542,733
110 R 4,542,734
129 4,542,735
139 4,542,736
425 4,542,737

CLASS 127

5 4,543,129

CLASS 128

67 4,542,738
156 4,542,739
204.21 4,542,740
303.1 4,542,741
325 4,542,742
327 4,542,743
419 P Re.31,990
660 4,542,744
4,542,746
4,542,747
713 4,542,748
752 4,542,749
760 4,542,750
4,542,751
784 4,542,752
788 4,542,753

CLASS 131

336 4,542,754
370 4,542,755

CLASS 134

1 4,543,130
8 4,543,131
177 4,542,756

CLASS 135

16 4,542,757
25 R 4,542,758
102 4,542,759

CLASS 136

249 4,543,441
255 4,543,442
256 4,543,443
4,543,444

CLASS 137

45 4,542,760
68 A 4,542,761
78.3 4,542,762
340 4,542,763
347 4,542,764
390 4,542,765
559 4,542,766
596.16 4,542,767
856 4,542,768

CLASS 139

66 R 4,542,769
68 4,542,770
302 4,542,771
435 4,542,772
448 4,542,816

CLASS 140

93.6 4,542,773

CLASS 141

1 4,542,774
65 4,542,775

CLASS 144

353 4,542,776

CLASS 148

1.5 4,543,133
11.5 F 4,543,132
113 4,543,134
403 4,543,135

CLASS 149

21 4,543,136
4,543,137

CLASS 150

52 B 4,542,777

CLASS 152

209 R 4,542,778
213 A 4,542,779

CLASS 156

69 4,543,138
73.1 4,543,154
152 4,543,139
157 4,543,140
164 4,543,141
209 4,543,142
213 4,543,143
229 B1 3,906,134
230 4,543,144
231 4,543,145
242 4,543,146
288 4,543,147
314 4,543,148
350 4,543,149
468 4,543,150
502 4,543,151
4,543,152
656 4,543,153

CLASS 162

57 4,543,155
101 4,543,156
134 4,543,157
145 4,543,158
164.1 4,543,159
193 4,543,160
323 4,543,161
343 4,543,162

CLASS 164

235 4,542,780
451 4,542,781

CLASS 165

9 4,542,782
30 4,542,783
80 B 4,542,784
95 4,542,785
144 4,542,786

CLASS 166

84 4,542,787
217 4,542,788
274 4,542,789
4,542,790
291 4,542,791
374 4,542,792

CLASS 172

180 4,542,793

CLASS 173

1 4,542,794
2 4,542,795

CLASS 174

5 R 4,543,445
11 R 4,543,446
35 GC 4,543,447
112 4,543,448
126 S 4,543,449

CLASS 175

19 4,542,796
228 4,542,797
340 4,542,798

CLASS 177

177 4,542,799
211 4,542,800

CLASS 179

2 C 4,543,450
2 EA 4,543,451
90 B 4,543,452
107 R 4,543,453

CLASS 180

53.1 4,542,801
219 Re.31,989
306 4,542,802

CLASS 181

129 4,542,803

CLASS 182

38 4,542,804
91 4,542,805
152 4,542,806
178 4,542,807

CLASS 186

56 4,542,808

CLASS 188

72.8 4,542,809
290 4,542,810
322.17 4,542,811

CLASS 192

0.098 4,542,814
56 R 4,542,812
70.27 4,542,813

CLASS 193

35 A 4,542,815

CLASS 194

99 4,542,817

CLASS 198

480 4,542,818
584 4,542,819
817 4,542,820
822 4,542,821

CLASS 200

16 A 4,543,454
50 B 4,543,455
61.54 4,543,456
61.7 4,543,458
67 D 4,543,459
83 N 4,543,457

CLASS 203

37 4,543,163
56 4,543,164
89 4,543,165

CLASS 204

44.2 4,543,166
51 4,543,167
78 4,543,168
105 R 4,543,169
129.2 4,543,170
129.3 4,543,171
224 R 4,543,172
263 4,543,173
290 R 4,543,174
400 4,543,175
406 4,543,176

CLASS 206

45.33 4,542,822
220 4,542,823
287.1 4,542,824
363 4,542,825
427 4,542,826
483 4,542,827
581 4,542,828

CLASS 208

130 4,543,177

CLASS 209

2 4,543,178
30 4,543,179
44 4,543,180
273 4,543,181
534 4,542,829

CLASS 210

95 4,543,182
187 4,543,183
193 4,543,184
194 4,543,185
221.2 4,543,186
232 4,543,187
304 4,543,188
713 4,543,189
721 4,543,190
746 4,543,191

CLASS 211

49.1 4,542,830
90 4,542,831
106 4,542,832

CLASS 215

319 4,542,833

CLASS 219

69 M 4,543,460
75 4,543,461
91.21 4,543,462
121 LH 4,543,463
4,543,464
121 PD 4,543,465
203 4,543,466
271 4,543,467
279 4,543,468
336 4,543,469
383 4,543,470
387 4,543,471
411 4,543,472
523 4,543,473
553 4,543,474

CLASS 221

116 4,542,834

CLASS 222

1 4,542,835
27 4,542,836
402.11 4,542,837

CLASS 223

87 4,542,838

CLASS 224

36 4,542,839
150 4,542,840
193 4,542,841

CLASS 225

2 4,542,842

CLASS 227

7 4,542,844

CLASS 228

45 4,542,845
112 4,542,843
4,542,846

CLASS 229

16 D 4,542,847

CLASS 232

4 R 4,542,848

CLASS 235

96 4,543,475

CLASS 236

1 EB 4,542,849
20 R 4,542,850
44 C 4,542,851
92 B 4,542,852

CLASS 239

383 4,542,853
587 4,542,854
690 4,542,855

CLASS 241

37.5 4,542,857
69 4,542,856

CLASS 242

54 R 4,542,858
67.2 4,542,859
72 R 4,542,860
86.5 R 4,542,861
96 4,542,862
4,542,863
193 4,542,864
205 4,542,865

CLASS 244

3.15 4,542,870
45 A 4,542,866
117 A 4,542,867
198 4,542,868
216 4,542,869

CLASS 248

73 4,542,871
183 4,542,872
218.4 4,542,873
238 4,542,874
491 4,542,875
4,542,876
561 4,542,877

CLASS 250

201 4,543,476
227 4,543,477
261 4,543,478
281 B1 4,267,448
327.2 4,543,479
4,543,480
339 4,543,481
343 4,543,482
374 4,543,483
423 P 4,543,484
487.1 4,543,485
492.1 4,543,486
493.1 4,543,487
507.1 4,543,488
578 4,543,489
4,543,490
4,543,491

CLASS 251

315 4,542,878
360 4,542,879

CLASS 252

8.55 B 4,543,193
8.6 4,543,192
33 4,543,194
33.4 4,543,195
35 4,543,196
62.54 4,543,208
62.56 4,543,197
62.59 4,543,198
75 4,543,199
106 4,543,200
299.1 4,543,201
305 4,543,202
312 4,542,745
522 R 4,543,203
531 4,543,204
546 4,543,205
557 4,543,206
570 4,543,207

CLASS 254

29 R 4,542,880
88 4,542,881
93 HP 4,542,882
217 4,542,883
391 4,542,884

CLASS 256

69 4,542,885

CLASS 260

112 B 4,543,209
4,543,210
4,543,211
239 BC 4,543,213
384 4,543,214
453 RZ B1 4,075,236
465.5 R 4,543,215
501.12 4,543,216
544 A 4,543,217

CLASS 261

24 4,543,218
109 4,543,219

CLASS 264

3 C 4,543,220
22 4,542,886
41 4,543,221
46.4 4,542,887
4,543,229
46.5 4,543,222
120 4,543,223
167 4,543,225
211 4,543,224
230 4,543,226
233 4,543,227
275 4,543,228

CLASS 266

44 4,542,888
137 4,542,889

CLASS 269

8 4,542,890
16 4,542,891
41 4,542,892

CLASS 270

52.5 4,542,893

CLASS 271

11 4,542,894
101 4,542,895
111 4,542,896

CLASS 272

73 4,542,897
97 4,542,898
118 4,542,899
134 4,542,900

CLASS 273

25 4,542,901
65 A 4,542,902
85 G 4,542,903
116 4,542,904
121 A 4,542,905
185 R 4,542,906

CLASS 277

140 4,542,907

CLASS 280

21 A 4,542,908
79.1 A 4,542,909
276 4,542,910
423 R 4,542,911
433 4,542,912
479 A 4,542,913
507 4,542,914
642 4,542,915
4,542,916
650 4,542,917
4,542,918
701 4,542,920
804 4,542,919

CLASS 285

56 B1 4,261,598
114 4,542,921
320 4,542,922
424 4,542,923

CLASS 292

87 4,542,924

CLASS 293

120 4,542,925
128 4,542,926

CLASS 294

9 4,542,927
81.1 4,542,928
88 Re.31,991
4,542,929
160 4,542,930

CLASS 296

100 4,542,931
160 4,542,932
164 4,542,933
194 4,542,934

CLASS 297

82 4,542,935
257 4,542,936
445 4,542,938
481 4,542,939

CLASS 299

1 4,542,940
12 4,542,941
81 4,542,942
93 4,542,943

CLASS 303

6 C 4,542,945
6 R 4,542,944

CLASS 307

82 4,543,492
126 4,543,493
200 B 4,543,494
257 4,543,495
261 4,543,496
308 4,543,497
360 4,543,498
477 4,543,499
530 4,543,500
4,543,501

CLASS 310

15 4,543,502
59 4,543,503
68 D 4,543,504
102 R 4,543,505
156 4,543,506
266 4,543,507

CLASS 313

429 4,543,508
454 4,543,509
477 R 4,543,510

CLASS 315

169.3 4,543,511
382 4,543,512

CLASS 318

158 4,543,513
282 4,543,514
293 4,543,515
318 4,543,516
632 4,543,517
757 4,543,518
759 4,543,519
807 4,543,520

CLASS 320

64 4,543,521

CLASS 323

303 4,543,522

CLASS 324

51 4,543,523
52 4,543,524
54 4,543,525
61 R 4,543,526
207 4,543,527
262 4,543,528
313 4,543,529

CLASS 328

108 4,543,530

CLASS 329

50 4,543,531
110 4,543,532

CLASS 330

5.5 4,543,533
9 4,543,534
53 4,543,535
85 4,543,536
129 4,543,537
260 4,543,538
297 4,543,539

CLASS 331

1 A 4,543,540

CLASS 332

16 R 4,543,541
18 4,543,542

CLASS 333

24.1 4,543,543
34 4,543,544
128 4,543,545
173 4,543,546
193 4,543,547
243 4,543,548
256 4,543,549

CLASS 335

78 4,543,550
284 4,543,551

CLASS 336

60 4,543,552
83 4,543,553
4,543,554
206 4,543,555
210 4,543,556

CLASS 337

196 4,543,557

CLASS 339

40 4,542,946
54 4,542,947
59 R 4,542,948
75 M 4,542,949
4,542,951
75 MP 4,542,950
90 R 4,542,952
198 GA 4,542,953

CLASS 340

347 AD 4,543,558
347 DA 4,543,560
4,543,561
347 DD 4,543,559
365 C 4,543,564
365 S 4,543,562
4,543,563
506 4,543,565
512 4,543,566
519 4,543,567
528 4,543,568
539 4,543,569
589 4,543,570
710 4,543,571
723 4,543,572
781 4,543,573
825.5 4,543,574
825.57 4,543,575
870.17 4,543,576
904 4,543,577
995 4,543,578

CLASS 343

365 4,543,579
460 4,543,580
702 4,543,581
710 4,543,582
792 4,543,583
881 4,543,584

CLASS 346

49 4,543,585
74.4 4,543,586
76 PH 4,543,587
4,543,588
140 R 4,543,589
4,543,590
4,543,591

CLASS 350

1.3 4,542,954
3.63 4,542,955
96.20 4,542,956
96.34 4,542,957
167 4,542,958
311 4,542,959
336 4,542,960
475 4,542,961
500 4,542,962
537 4,542,963

CLASS 351

44 4,542,964
57 4,542,965

CLASS 354

82 4,542,966
187 4,542,967
322 4,542,968
354 4,542,969
400 4,542,970
402 4,542,972
403 4,542,971
413 4,542,973
415 4,542,974
416 4,542,975

CLASS 355

3 CH 4,542,977
3 R 4,542,976
3 TR 4,542,978
4 4,542,979
14 E 4,542,981
14 FU 4,542,980
40 4,542,982
55 4,542,983
68 4,542,984
69 4,542,985

CLASS 356

5 4,542,986
44 4,542,987
352 4,542,988
373 4,542,989

CLASS 357

23.4 4,543,596
23.6 4,543,597
43 4,543,592
48 4,543,593
51 4,543,594
71 4,543,595

CLASS 358

11 4,543,598
13 4,543,599
4,543,600
106 4,543,602
109 4,543,603
111 4,543,604
4,543,605
114 4,543,606
140 4,543,607
153 4,543,608
193.1 4,543,614
210 4,543,609
213 4,543,601
4,543,610
260 4,543,611
261 4,543,612
285 4,543,615
298 4,543,613
335 4,543,616
342 4,543,617

CLASS 360

15 4,543,618
49 4,543,620
77 4,543,621
97 4,543,619

CLASS 362

219 4,543,622
267 4,543,623

CLASS 363

146 4,543,624

CLASS 364

169 4,543,625
200 4,543,626
4,543,627
4,543,628
4,543,629
4,543,630
4,543,631
421 4,543,632
426 4,543,633
431.07 4,543,634
474 4,543,635
4,543,636
500 4,543,637
513 4,543,638
4,543,639
604 4,543,640
756 4,543,641
900 4,543,642
4,543,643
4,543,644
4,543,645
4,543,646

CLASS 365

201 4,543,647

CLASS 366

61 4,542,990
106 4,542,991
300 4,542,992

CLASS 367

29 4,543,648
96 4,543,649

CLASS 369

43 4,543,650

CLASS 370

16 4,543,651
66 4,543,652
4,543,653
94 4,543,654

CLASS 372

2 4,543,655

CLASS 373

101 4,543,656

CLASS 374

42 4,542,993

CLASS 375

1 4,543,657

CLASS 376

110 4,543,230
133 4,543,231
289 4,543,232
446 4,543,233

CLASS 377

8 4,543,658

CLASS 382

4,543,659
34 4,543,660

CLASS 384

101 4,542,994
224 4,542,995
536 4,542,996

CLASS 400

120 4,542,997
139 4,542,998
175 4,542,999
180 4,543,000
212 4,543,001
4,543,002
632 4,543,003
649 4,543,004

CLASS 401

260 4,543,005

CLASS 403

93 4,543,006
97 4,543,007
174 4,543,008
201 4,543,009
225 4,543,010
338 4,543,011

CLASS 405

71 4,543,012
128 4,543,013
207 4,543,014
256 4,543,015
267 4,543,016

CLASS 406

31 4,543,017
102 4,543,018

CLASS 408

57 4,543,019

CLASS 409

12 4,543,020
134 4,543,021
298 4,543,022

CLASS 411

180 4,543,023
364 4,543,024

CLASS 413

6 4,543,025

CLASS 414

352 4,543,026
400 4,543,027
408 4,543,028
412 4,543,029
563 4,543,030
631 4,543,031
730 4,543,032
732 4,543,033
752 4,543,034
786 4,543,035

CLASS 415

1 4,543,036
90 4,543,037
112 4,543,038
190 4,543,039

CLASS 416

134 A 4,543,040
183 4,543,041
197 A 4,543,042

CLASS 417

222 4,543,043
342 4,543,044
499 4,543,045

CLASS 418

63 4,543,046
4,543,047
191 4,543,048
269 4,543,049

CLASS 420

409 4,543,234
443 4,543,235

CLASS 422

50 4,543,236
62 4,543,237
63 4,543,238

CLASS 423

321 S 4,543,239
346 4,543,240
406 4,543,242
447.7 4,543,241
478 4,543,243
522 4,543,244
574 R 4,543,245
648 R 4,543,246

CLASS 424

14 4,543,247
70 4,543,249
4,543,250
81 4,543,251
116 4,543,259

CLASS 425

28 D 4,543,050
71 4,543,051
110 4,543,052
289 4,543,053
335 4,543,054

CLASS 426

266 4,543,260
271 4,543,261
306 4,543,262
520 4,543,263
629 4,543,264

CLASS 427

34 4,543,265
38 4,543,266
39 4,543,267
44 4,543,268
4,543,269
53.1 4,543,270
54.1 4,543,271
58 4,543,272
126.3 4,543,273
197 4,543,274
250 4,543,275
388.3 4,543,276
430.1 4,543,277

CLASS 428

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